PROPERTY OF ENGINEERING DEPARTMENT
AM. TEL. & TEL. COMPANY.

Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves
PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY, MONADNOCK BLOCK, CHICAGO

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CHICAGO, SEPTEMBER 21, 1912

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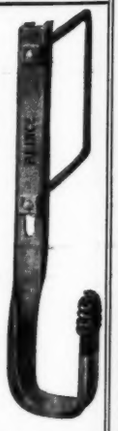

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Telephony.

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THE WELFARE OF AN INDUSTRY.

"There is asserting itself an Enlightened Selfishness born out of a realization that the welfare of an industry is dependent upon the welfare of ALL engaged in it."—George W. Perkins, in New York Times.

Prosperity and the Investment Markets.

While industrial activity is steadily increasing in the United States, the investment markets remain almost stagnant, says Financial America, in an editorial pointing out the causes of this condition. It is only in issues which are situated exceptionally favorably that any substantial demand is recorded. This is particularly true of bonds, although there is some tendency to invest in industrial issues carrying a high rate of interest. This tendency to look for a better ratio of investment return has been developing ever since the increase in the cost of living took on a serious phase.

The comparative deadness of investment interests is indicated in the prices of New York city bonds, which are now selling at or near the lowest points. Many first class railroad and industrial bonds carrying a low fixed interest rate are also quoted at about their lowest points. The apathy of investors may almost be said to be worldwide.

Coupled with the paucity of the investment demand is an almost total absence of speculation at the international stock exchange centres. Of course, the season is somewhat to blame for this latter feature. The autumn settlements everywhere make a considerable demand upon monetary resources, while in this country an immense agricultural production will be moved to market and preparations are under way to move the cotton crop of Egypt and the coffee crop of Brazil—conditions which call for the temporary tying-up of a large amount of funds. When we contemplate the aspect of business affairs in the United States decidedly more cheerful comment can be made. It is unnecessary to particularize in this respect. The situation is apparent to everyone. The evidence of industrial and commercial activity is presented by the fair August gains made by the bank clearances over the record of the same month of 1911. This improvement is all the more significant because of the absence of speculative excitement and activity.

Railroad earnings are telling the same story of recovery, the generally large increases in net results for July now coming to hand being especially gratifying.

Politics does not seem to be any factor in retarding legitimate business recovery. If this state of indifference to the presidential contest should continue, there is no reason to suppose that prosperity in the United States will not in time become general. It is to be hoped that when this is an established fact the increase of profits accruing to all enterprises will gradually lead to a return of healthful investment inquiry.

Cardinal Gibbons on Government Ownership.

Cardinal Gibbons, of Baltimore, the eminent Catholic prelate, does not favor the government taking over public utilities. In a recent published interview he gave his reasons for his belief, declaring, among other things, that public ownership is already an accomplished fact, through the wide spread holdings of securities, and that, as the people are the government, government ownership practically obtains today.

Cardinal Gibbons said, in part: "While the public has the right to exercise intelligent control over corporations which serve it with public necessities, government ownership and management of these utilities would be unwise from every standpoint. The present industrial progress of the United States is so vast that great combinations of capital are necessary forces in our business life."

As showing his appreciation of what competitive operation of public utilities has done, he said: "Competition is healthy and we should have it. Government ownership of great public utilities would practically end this competition, and the public would suffer then more acutely from government monopoly than the Socialists claim the people are now suffering under, as they assert, the control of the trusts."

As to regulation by the government, the Cardinal declared: "I believe in the proper regulation of big business corpora-

tions and the broad-minded men at the head of these vast business enterprises would, I feel sure, welcome fair and intelligent government control. Such control should be of a nature to assure the people good service at prices which would protect the honest investor; it should prevent industrial warfare; should end political interference, and should encourage honest effort to serve the people with the utilities which they require."

"It must be remembered by those who so foolishly demand public and government ownership," he continued, "that year by year the great public-service corporations are becoming more and more the property of the public. For instance, five years ago, when Theodore Vail became president of the American Telephone Company, there were 18,000 stockholders, now there are over 50,000. In 1901 the Baltimore & Ohio Railroad had 3,256 stockholders; now it has over 11,000. Ten years ago the Pennsylvania Railroad had 37,870 stockholders; now it has over 73,000. In the same period the Great Northern Railroad has increased its stockholders from 700 to about 18,000; the New York Central from 9,782 to over 22,000. At the present time, it is stated by authorities, the owners of the railroads in the United States number not less than two million people.

"When there are added to these the owners of stocks and bonds in other public service corporations it will be apparent to all fair-minded men that public ownership of the proper kind is already here. Millions of our people have a direct and personal interest in the public service business, and they are not likely to be misled by any of the unfounded and altogether theoretical beliefs of the Socialists in government ownership."

Pointing out the non-success of government ownership abroad, he concluded as follows: "How would big enterprises be conducted under government owership? It is but necessary to learn of the many disastrous failures of government operations in European countries to indicate what might happen here.

"Reckless expenditure of the public funds, inefficiency of management, depreciation in service, political control and corruption and public dissatisfaction are all certain to follow if ever the citizens of the United States become so neglectful of their own welfare as to adopt government ownership of the great public utilities."

Put the Smile In Your Voice!

There is probably nothing more infectious than a smile, and yet how rarely is it found in business life. We have all heard the songs at the theatres with a laughing chorus. There is absolutely no reason for a laugh and yet through sympathy the audience is as a whole either laughing or smiling with the performers.

There is no stopping to analyze the fact that possibly the singers go through the same performance at least once a day and can not possibly have any real cause for their hilariousness, depending absolutely upon their powers of mimicry to produce the impression of real mirth says a writer in the Mountain States Monitor.

Many people who are most agreeable as social companions are exactly the reverse in their business relations. Why should we make social and neglect business friends?

We don't always feel in the smiling mood, but we can emulate the actors and simulate a smile. As long as the other person can not see behind the mask, what matter if we are practicing a deceit? The results warrant it.

In telephoning we do not come in direct personal contact with the individual, but the mood of each speaker is invisibly carried to the other just as surely by the tonal qualities of the voice, and we should convey the impression of an agreeable personality, real or simulated.

It never fails. Good nature is infectious. "Put the smile in your voice!"

The demand for new and practical ideas is as urgent today as it ever was and the man who can bring them forward is sure to find a taker at a good price.

Kellogg on the Trust Decisions.

Frank B. Kellogg of St. Paul, the newly elected president of the American Bar Association, dissents from commonly accepted ideas of the results of the Standard Oil and tobacco decisions in a speech which he delivered at the Milwaukee convention, and because of his office and his record as trust prosecutor his opinion will be read with great interest, undoubtedly, says a Chicago newspaper. In a review of the things gained by the decisions he takes account of the following:

They established the power of the federal government over combinations and corporations organized by state authority. Until after these decisions that power was denied. The judgment enabled the government to enforce publicity in the affairs of the corporations, put an end to all the long list of unfair methods of competition used for the purpose of crushing out and destroying competitors, severed the holding company, separated the subsidiary corporations and prevented them from being managed as one harmonious whole.

To the smaller corporations and individuals engaged in the business the Standard Oil decision brought protection from the control and domination of the great corporation, and today the independent manufacturer in the oil industry is enjoying the right to engage in business with a fair opportunity to compete.

As for the rise in the value of Standard Oil stocks, Mr. Kellogg indicates that it has nothing to do with the question. Assets that had been concealed were revealed, and when the stocks came upon the market they were so attractive as to stimulate buying. But the stock quotations cannot be used as an offset to the check upon monopoly and the readjustment that has occurred since and that is going on now.

While Mr. Kellogg believes that the Sherman act is sufficient to put an end to the trusts and combinations in existence that are harmful to the public, it is his opinion that congress should take action that will not only prevent the recurrence of any such condition but make clear the nature of corporations and the extent of combinations and aggregations which will be permitted to engage in interstate commerce. That can be done through a system of license or incorporation, he affirms.

Practical Telephony for the Practical Exchange Manager

The First Installment of a Series of Articles Relating to the Management and Operation of a Moderate Size Exchange—The Organization of a Telephone Company and the Factors Which Make for Its Success

By H. R. Van Deventer

A great scientist once said: "The formation of a child's character should begin with its grandparents," meaning that the formation, the attention to details, cannot begin too early. The same remark well applies to the character and formation of a telephone company.

The reasons for the existence, and for the bringing into existence of a telephone company, are many, and deserve the most careful study and analysis. A clear understanding of them contributes in no small measure to the success of the company in later years.

In the majority of cases, it may truthfully be said that the prime reason for the formation of a company is the desire of a number of people for telephone service. Seldom are the incorporators interested in the "business" of operating an exchange; usually they know nothing about it. Few companies have ever been organized in the beginning solely for money-making reasons.

The desire for telephone service is something based primarily not on the want of the individual, but on the want of many individuals acting in unison. Of all the public service corporations, a telephone company is essentially the most public.

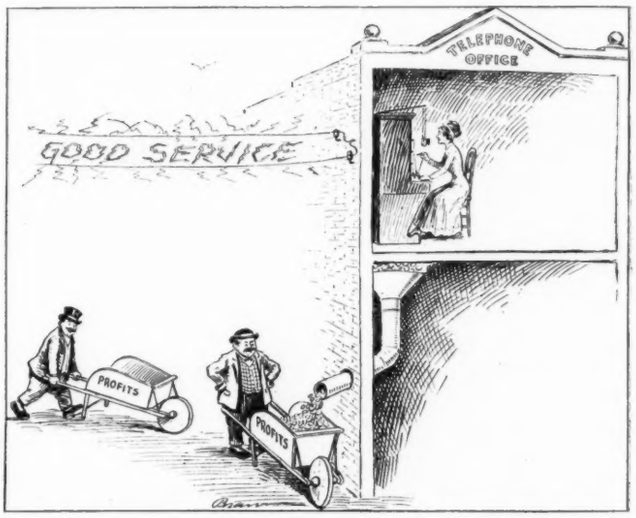
The railroads for instance, simply serve the individual want. A man may decide to take a journey, and need consult no one but himself. The railroads simply serve him individually. Incidentally they serve a number of other persons, all of whom, however, are acting independently of each other. But for a telephone conversation, it is necessary that two people be of the same mind, at least

Through Its Service the Company Is Criticized.

they must be interested in the same thing. Of course, this may be either a social or business conversation, but in any event there must be a community of interests between two or more people before the telephone company can begin its existence of serving the people.

Now the railroad could carry one man, a gas company could light one house, the ice company supply one refrigerator; therefore these corporations really serve the individual wants of the public. But the telephone company cannot serve one, there must be two people, a mutual interest, a truly public necessity.

As the desire for service is that which brings a company into existence, just so the giving of service must be the first, last and only interest in the minds of those operating a telephone company if its ultimate success, financial and otherwise, is desired.



A Company Which Serves Well Will be Profitable.

This "serving the people" does not mean a rate so low that the property cannot be properly operated and maintained; in fact, it means just the reverse of this. Note the number of companies which have been wrecked by endeavoring to give "mutual" service at rates which allowed nothing for proper maintenance, nothing for depreciation, and which barely covered operating expenses.

A company serving the people well, properly managed by practical telephone men, cannot fail to be successful financially, and it will be a profitable undertaking.

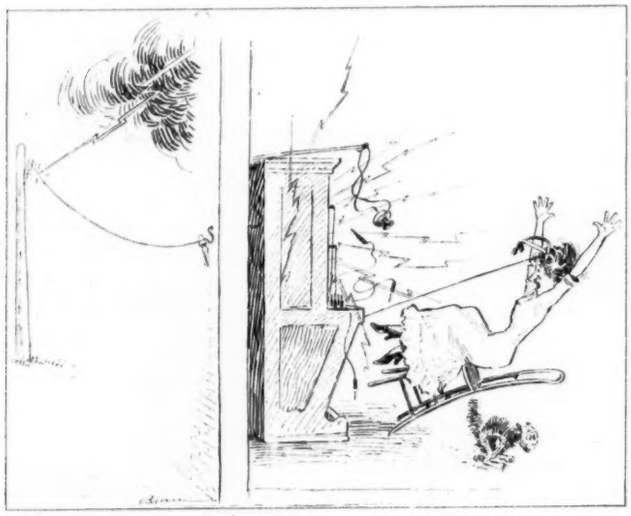
These statements have been made many times before, yet they are seldom considered when new companies are organized.

The incorporators of a telephone company in the average small town are the country merchants, the doctors, the cotton, cattle and tobacco buyers, and others whose interests compel them to get in touch with a large number of people. With these one will find the farmer, the most numerous of all, seeking relief from his isolation; and the pastor who desires to keep in touch with his flock on week days as well as Sundays.

Such incorporators organize with the single view of obtaining service, and, not being in the telephone "business," seldom consider the maintenance, extensions, or depreciation which are bound to come. They figure what the initial installation will cost, the salary of the operator and troublemen, rent, light and fuel, and make their rates accordingly. These people seek service, and get it, for a

season. They ultimately reorganize or else the system is discontinued, because they failed to analyze the reasons for their existence, which analysis would naturally lead them to the study of how they could continue to exist.

Another class of incorporators are those who think the giving of telephone service is a get-rich-quick business.



"Soon Various Things Begin to Happen."

They make the initial rate so high that the subscribers from the beginning are dissatisfied, their attitude being, "we'll try it for a while." The manager's thought is economy. Not economy so far as efficiency is concerned, but economy in construction, in maintenance, in service, in the number of employes and their quality. In other words, the telephone plan is looked upon as a squeezing machine, and the people as legitimate victims, out of whom dollars may be squeezed.

The result of such an attitude is apparent from a study of the early days of the first companies in the field, which were often operated in this fashion. This policy brought into existence the Independent telephone movement, a movement of the people for good service, mark you, not a movement to get into the telephone business.

There is little of this kind of building now. The older telephone companies realize the error and now study the public demand. The modern public will not tolerate such concerns, and the law now regulates them.

There is still a third class, those who want to give good service and make money; who start right but lack practical knowledge. They start out with a few subscribers at a fair rate. They employ some bright young man as manager, usually one who is popular in the local community, or who happens to be the son of one of the leading citizens. Now this individual seldom does the outside work himself, but usually gets the local "Edison," who has been putting up wind mills, installing gasoline engines, building farm lines and hen coops, and who is, therefore, considered "bright," as chief electrician and all-around man.

The switchboard and telephones are purchased, and by the way, these are usually purchased before the poles and lines are erected, thereby tying up considerable capital unnecessarily. The line is put up as per instructions given in some one of the telephone manufacturing companies' instruction books, and everything seems lovely.

Soon various things begin to happen, ranging all the way from broken receiver cords to switchboard troubles. Owing to the absolute lack of practical knowledge by every one concerned, these matters do not receive attention and the service becomes unsatisfactory. Right here the pleased subscribers turn into angry ones, and rentals are held up. As the finances are getting into bad shape, something must be done, so the directors start, not to improve the service or to get competent help, but to reduce expenses by firing "George," the manager, and letting "Jim," George's assistant, have entire charge, because "Jim knows about as much as George, as he has been working on the telephones and lines for the last six months, etc."

Now, as a matter of fact, George was the only man on the job who knew anything about switchboard repairs or who had any tools for such work. Jim, of course, does not betray his ignorance. He does the best he can with his 14-inch lineman's screwdriver and the other dainty tools to which he is accustomed, with the result that the service is even worse than before, and the valuable equipment is damaged beyond repair.

The result of an organization of this kind is not hard to see. The moral: provide men who know. If you are going to make shoes, get a shoemaker; if you propose to conduct a telephone business, get a telephone man.

Usually subscribers who have been through a condition of this kind, will stand for an increase in rates sufficient to insure good service. The American people are always reasonable. The people who really expect something for nothing, are nearly all dead.

I am of the firm opinion that the preliminary work of organizing a telephone company should be done in conjunction with a psychologist. The successful business man in any pursuit, is more or less a student of psychology, and just as he analyzes his fellow men, just so must the telephone psychologist analyze the desires, not only of the communities in which he is to operate, but also of the individuals composing these communities. And from the beginning, each and every one connected with a telephone company, must have impressed upon him the fundamental fact that he is an important part of the machinery of service.

Just as the individual has a personality, so has a telephone company, and the employes of the company should be selected with the fact in mind that they are the hands, the eyes, and the tongue of the company; that they are

"Jim" Does the Best He Can.

the contact points, the points of attack and defense, and are the company, so far as the public is concerned.

The public does not deal with the president, or the board of directors, nor is the fine multiple switchboard or any of the other costly appliances which form the physical plant understood or appreciated. If the service is good, the pub-

lic praises the operator, not the equipment. If the service is bad, the operator is condemned. The operator is the mouthpiece of the company. It is the voice and manner of the operator, and her service, which either pleases or antagonizes.

The personality of the manager and his corps of troublemen and assistants is pleasing, or otherwise. Often the public like an inefficient man simply because he is pleasant. A good manager combines a pleasing personality with a knowledge of the business.

All these things must be taken into account. First, the wants and desires of the public. Can these wants and desires be fulfilled and, if so, at a profit? Can the necessary men and women be secured who will tend to increase the desire of the public for telephone service, tend to build up the business, and to bind together the interests of the company and its subscribers? The solution of these three points is the beginning of a practical telephone system.

As an analysis of the wants of the public is the first step, some illustrative cases of such analysis will be given in the next article.

(To be continued.)

Relation Between Telephone and High Tension Lines

Abstract of Two Decisions, One in Illinois and One in Iowa, in Which Courts Have Recognized the Serious Menace of High Voltage Systems When in Proximity to Telephone Lines — Remedies Prescribed in Both Cases at Issue

High Tension Lines.

Two interesting decisions relating to the danger to telephone lines of induction from high tension transmission systems were recently handed down, one in Illinois and the other in Iowa. In commenting on the Illionis decision the Electrical World denominated it as "probably the first important test case involving the sole question of hazard to low tension communication lines from exposure to high tension transmission lines," and gave an abstract of the decision, (of the chancery branch of the circuit court of Logan county, Ill.), in part as follows:

"The case was that of the American Telephone & Telegraph Co. vs. the Springfield & Northeastern Traction Co., affecting the right to overbuild a telephone or telegraph line with a parallel high-tension transmission line on the same right-of-way. The complaint grew out of a situation which arose in the city of Lincoln, Ill., during the latter part of 1907.

At that time the traction company, which is one of the numerous companies making up the Illinois Traction System, commenced to build its road through Lincoln, forming part of a continuous route from Peoria, Ill., to Springfield, Ill., and points south. The single-phase traction system was employed, with catenary construction supported from span wires and a trolley-wire pressure of 3,300 volts of twenty-five cycles. On one of the lines of poles, at the street curb, there was carried a 33,000-volt, three-phase transmission circuit and sundry low-tension wires for signaling and communicating purposes.

For a distance of about 700 feet on one of the principal streets the line of sixty-five-foot wooden poles supporting both the span wires and the high-tension circuit was set in line with the poles of the telephone company, so that the 33,000-volt line was about fourteen feet above the telephone wires and parallel to them.

The telephone company on November 20, 1907, served notice on the respondent that the construction was defective and dangerous and on January 10, 1908, filed formal complaint. In substance the complainant averred that its telephone line had been a lawful occupant of the street in question for twelve years, under due authority of the state, county and municipality, and that this line formed part of a comprehensive telephone network used for serving the public.

Furthermore it was averred that the transmission line constituted a serious menace to the property of the telephone company and the lives of employes and patrons and would serve its purpose equally well if constructed upon private right-of-way, removed a safe distance from other wires. Averment was also made that the trolley wire constituted a serious hazard because of the high voltage employed. The telephone company's system was alleged to operate at low tension and to constitute no hazard to the public, and it was maintained that the system was necessarily delicate and incapable of withstanding pressures much in excess of 500 volts; that the known and approved protective devices are sufficient to exclude only those currents ordinarily employed to operate street cars and incandescent lamps and unable to furnish protection against the pressures employed by the traction company; that the failure of the traction company's system in any one of numerous ways might convey dangerous currents to the telephone systems, with attendant injury to life and property.

Complainant finally averred that it was the traction company's duty, in so locating its line, 'to adopt and install known and approved safeguards, methods and protective devices, which would prevent its own line, carrying such dangerous electrical current, from coming in contact with the wires or other properties of complainant; that such safeguards, methods and devices are well known in the electrical art and are accepted by those versed in the science of electricity,' and that such parallel overbuilding is contrary to approved and accepted methods of construction now in use. The bill of complaint prayed, among other things, for a preliminary injunction restraining the use of the transmission and trolley circuits, later to be made permanent until the high-tension line might be removed to a safe distance and the trolley voltage reduced to a safe value, or until adequate safeguards and protection might be installed.

In its answer the traction company denied in substance the existence of danger or hazard to life and property while the line was maintained in the safe condition that then characterized it and averred that the construction in all respects complied with the franchise granted by the city of Lincoln. The respondent further denied that it had failed to use the best known methods of construction and the most approved safeguards and protective devices for preventing contact between its wires and those of the complainant, and denied that the telephone company had adopted the safeguards, methods and protective devices well known to the art and accepted by those versed in it for preventing contact between the two systems. It denied that wind, snow, sleet or storm, or interference by persons or animals, commonly caused high-tension lines constructed like those in question to fall, as charged in the complaint.

Owing to the belief of the telephone company that it had an unusually clear case involving the question of pure hazard from parallel overhead high-tension wires, the issue was made a test case. A large amount of evidence was introduced and many of the leading electrical engineers of the country testified in behalf of the complainants.

Judge Harris, in his opinion, described both complainant and defendant as public-service corporations differing only in prior authority and occupation of street. The opinion states that the construction of the telephone line was such that the respondent could not complain of it, and from all the evidence of all the witnesses no protective device could be used in telephone construction which would safeguard it against a pressure of 33,000 volts or anything like it.

After considering the question of the court's jurisdiction, the opinion goes on to state that 'so far as concerns the respondent the complainant was occupying Chicago street between Broadway and Clinton street, not with any exclusive franchise, not with any amount of space to be measured and set off to it, but with the right as against the respondent to occupy so much of the street as was necessary for the successful operation of its business.'

A little further on the opinion says: 'The things to be guarded against by respondent in the construction of its line under the law, as I understand it, is such an inter-

(Continued on page 440.)

New Construction by Federal Company.

The Federal Telephone & Telegraph Co., of Buffalo, N. Y., has under way and planned a number of new circuits. Among others an estimate covering five additional circuits between Buffalo, Depew and Lancaster, has been approved and construction will be started at once. These lines are needed to relieve some of the local circuits, and to provide facilities for the increased demand for Federal service between the above points.

The company will immediately commence the construction of an additional toll circuit between Kennedy, Randolph and Jamestown, N. Y. The large increase in the number of long distance calls between these points is due not only to the popularity of the service, but to the increase of Independent subscribers in the towns named.

There will be an additional toll circuit constructed between Silver Creek and Dunkirk at once. The estimate and specifications have been approved, and the material ordered. The construction of this circuit is a part of the general improvements and additions that are planned for the care of the increasing business in that section.

Cuyahoga and United States Bonds Offered.

First mortgage 5 per cent. gold bonds of both the Cuyahoga Telephone Co., of Cleveland, Ohio, and the United States Telephone Co., the long distance organization having headquarters at Columbus, Ohio, are being offered to investors by Miller & Co., New York City. This is the first public offering of securities of either company for a number of years. Both are controlled by J. P. Morgan & Co., New York.

The literature describing the bonds of the Cuyahoga company shows that there is $2,708,000 outstanding of an authorized issue of $3,500,000, the balance being pledged as collateral. Of $1,500,000 preferred stock authorized, $1,437,350 is outstanding; of $2,000,000 common stock authorized, there is issued $1,500,000. It goes on to state that the company was incorporated September 13, 1898, under the laws of Ohio, and that it serves a population of over 565,000, having about 30,000 telephones in operation. The system is said to comprise approximately sixty miles of conduit, 400 duct miles of conduit, 230 miles of underground cable and 150 miles of aerial cable.

A comparative statement of earnings and expenses for the last six calendar year is given below:

COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES, CUYAHOGA TELEPHONE CO.						
	1906	1907	1908	1909	1910	1911
Gross earnings	$716,627	$782,842	$829,549	$850,034	$887,162	$917,486
Expenses	411,508	403,066	379,693	434,983	471,526	469,499
Net earnings	$305,119	$379,776	$449,856	$415,051	$415,636	$447,987

The pamphlet states that the preferred stock has paid dividends at the rate of 6 per cent. per annum for the past eight years.

The offer of the United States company's bonds gives the system over 30,000 miles of long distance lines, connecting more than 900 Independent exchanges, serving above 320,000 telephones.

A depreciation fund of $80,000 a year, it is said, is set aside regularly out of earnings. The replacement value of the system is stated as in excess of $5,000,000. A dividend of 6 per cent. per annum has been maintained for the past eight years.

The company, the pamphlet states, was organized August 23, 1898, under the laws of Ohio. It operates throughout Ohio and also connects with other long distance lines in western Pennsylvania, Kentucky, Indiana, New York, Michigan and West Virginia.

Local companies controlled by the United States are listed as follows: Youngstown Telephone Co.; Stark County Telephone Co., of Canton; Columbiana County Telephone Co.; Findlay Home Telephone Co.; Citizens Telephone & Message Co., of Fostoria; Massillin Telephone Co.; Lancaster Telephone Co.; and Zanesville Telephone & Telegraph Co.

A comparative statement of earnings and expenses for the past three years, ended December 31, is given as follows:

REVENUE ACCOUNT.

	1911	1910	1909
Gross income	$477,199	$493,730	$458,129
Expenses and depreciation reserve	283,716	282,995	282,847
Net earnings	$193,483	$210,735	$175,282

The resources of the company as of December 31, for 1910 and 1911, as given as follows:

RESOURCES.

As of December 31.

	1911	1910
Property and plant	$5,103,284.43	$5,092,835.37
Stocks and bonds	1,871,019.10	1,845,419.10
Current assets	159,075.70	168,038.68
Deferred assets	16,694.95	13,139.94
Totals	$7,150,038.18	$7,119,433.09

The pamphlet states that $2,715,000 bonds are authorized, $2,156,000 being issued; that $4,000,000 common stock is authorized, of which $3,100,000 is outstanding; and that $1,500,000 preferred stock is authorized, of which $1,100,000 has been issued.

Relief Association Gives Annual Outing.

The Rochester (N. Y.) Telephone Company's Relief Association gave its annual outing recently. The party went from Rochester to Charlotte, where it boarded a chartered pleasure boat, and had a very delightful ride on Lake Ontario.

On account of the inclement weather that evening, the attendance was not as large as was expected, but a considerable number braved the storm and those who did were amply repaid by the enjoyable time they had.

The members of the Relief Association are all employes of the Rochester Telephone Co.

Closing Up Omaha Independent System.

The South Omaha exchange of the old Independent Telephone Co. has been closed. The exchange at Florence was discontinued some weeks ago. This leaves only the Omaha exchange working. There are no more automatic telephones in Florence or South Omaha. In Omaha some 2,000 are still in use.

In the office of the Nebraska Telephone Co., which is now the owner and operator of the old Independent system, there are orders for the removal of 1,000 of the 2,000 that are still in operation. Those ordered out are being removed at the rate of some fifty or sixty per day.

Slow Revival of Business Since 1907 Panic Good Sign

"Boersianer," Noted Financial Writer on Staff of Hearst Papers, Analyzes Commercial Conditions Since Famous Panic Five Years Ago—Shows How Recovery of Business Has Been Slow, But Is the More Permanent Because of That Very Fact

An interesting and convincing analysis of general business conditions was recently made by "Boersianer," the well known financial writer for the Hearst papers. He finds that the recovery of business since the panic of 1907 has been gradual and, therefore, the more substantial. He sees in the present bounteous crops the cap sheaf, as it were, of a permanent prosperity.

"The many who at length admit grudgingly, or at best offhandedly, that times are 'good' cannot realize what they say when they add, 'but it will be short lived prosperity; it won't last long. There is too much dissatisfaction over high prices and presidential politics always has its effect,'" says Boersianer in taking up his subject.

"The business revival did not occur over night," he continues. "Had it so happened its permanence might be questioned. Its formative period has been five years; for it is now notorious that the 'recovery' in 1908—from 1907—was a tour de force on the part of the Wall Street element; a retrievement that, after all, only lifted the price of securities.

"From the fatal October in 1907 until January of the current year the country underwent a process of purgation. Rotten financial structures fell. Weak commercial institutions surrendered. Questionable enterprises tumbled. Over extended organizations were formed. Manufactures dropped to a capacity commensurate with actual demands. Merchants bought for the day—and not for the future. Extravagance everywhere was sobered. Promotions ceased. Railways entirely stopped making improvements.

"At bedrock, when excesses had been cured, when the economic house had been cleansed and renovated—had been put in perfect order—the recovery began, very slowly, very cautiously. Never before had the average tradesman shown such timidity. Everything he did was done tentatively. He carefully felt his way. He sedulously avoided superfluities. He took absolutely no chance.

"It has been a prolonged period of preparation, uncannily cautious. Stocks everywhere were depleted. A hand-to-mouth policy had prevailed for four years. This does not mean, to be sure, that the trade turnover was of midget proportions. To meet the necessities of 92,000,000 Americans in itself assures a fair measurement of commerce.

"But the needs of 92,000,000 people met, there was nothing left over. They were fed, so to speak, day by day, and clothed semi-annually. There was nothing in storage, speaking figuratively again. Warehouses and granaries were depleted.

"The forward movement began, supercautiously, with a bare cupboard and an empty wardrobe. For seven months progress has been gradual. It has been a step by step journey, with a wary pause after every step. There has been an entire absence of exuberance, of overconfidence. Entirely the contrary. And now, following repentance and reform, nature comes with a stupendous bounty. After the mediocre crops of the past, she now bestows upon this country what promises to be the most sumptuous harvest in the world's history. Reformation is to receive a very rich and unusual reward indeed.

"Coincidently—and, of course, unfortunately for the foreigner—Europe's yield is the poorest in years. The crops abroad threaten to be a failure. Therefore, the bountifulness here will not mean a world's oversupply—and consequently lower prices for the American farmer. It will bring to the agriculturist as much money as was yielded by the indifferent harvests of 1910 and 1911. It implies, also, the swelling of a foreign trade balance, already of historical proportions.

"To recapitulate; the country never before gave itself so much time to recuperate from a panic. Recuperations from former crises were shorter and almost always feverishly expedient. The present retrievement began on a solid and thoroughly cleansed foundation. Finances were never so sound and commerce never so healthy. Finally, and not least importantly, the earth brings real wealth in an amount staggering to economists. If this does not spell permanent prosperity then the meaning of the word 'permanent' must be changed to a rigid synonym for eternal."

All in all, Boersianer's view of conditions is most comforting. As he is acknowledged to be a thoughtful analyst and a far-seeing student of business, we may well draw confidence from it. Certain it is that his opinions are confirmed on every hand.

GETTING READY!

—Tad, in Chicago American.

Some Reflections

Looking Backward—Fourteen Years' Observation

By J. C. Kelsey

An Iowa man has paid me a great compliment. He merely said I was crazy.

Think of it! Away out in the Progressive state is a man who mourns the departure of my reason, and says that I have brooded over telephone matters until it is merely a question of time before I peep through the few apertures of a padded cell!

When Julius Caesar got his final call, the thing which worried him the most was the fact that his friend Brutus seemed to be enjoying the killing.

Historically speaking, I should say to my Independent friend, "Et Tu, Iowa."

If you want a good insight into human nature, try to write an excitable column once a week. One week you step on this man's toes, and next week you step on that man's.

As long as you work along this man's line of thought, you are sane. And the minute you run counter to his needs and necessities, you are insane!

There is a very curious streak in our human make-up. We all seem to fully realize which side of the bread is buttered.

The curious streak showed itself in Benedict Arnold. After he had betrayed his country, he was twice as cruel to Americans as he had formerly been to the British.

A man is usually a quiet church-member and takes indifferent interest in things. Let him take up Christian Science, and in his new church he works his head off.

A salesman is indifferent in your employ. Discharge him, and he will do twice as much for your competitor.

So I am not all sensitive to the suggestion that I am crazy. I think possibly we may be in a crazy business—one in which there is much energy wasted and many ill-feelings engendered.

I did not start this column entirely of my own suggestion. The original suggestion was given by a very active board of directors of the International Independent Telephone Association. And I took it up willingly.

I have no regret for a single word I have written. I have signed every statement.

At that time it seemed almost necessary for a general campaign of activity. Today I see no great reason.

As a matter of fact, I see no reason in butting my head against a stone wall.

Each of us has a right to fight his own battles in his own particular way. I have always entertained a fond idea that I would rather be taken out, amid the roll of drums, and shot at sunrise on the lake-front, than to have some one turn on the gas while I was asleep.

This has been the situation. And it has not been conducive to the mildest behavior on my part, either.

I am not trying to prove sanity, because such an effort might lead to a conviction.

In a recent case in Chicago, a man was tried severely by the attorneys of his family to show his lack of a sane mind. He did magnificently and the jury was about to adjourn to vote upon his clearness of mind, when he startled them all by saying that no one at the trial had yet found out that he was John the Baptist.

So don't get excited when I make the following remark. I can not say that it was an act of God that I came into the telephone business.

Fourteen years ago I was happy in the street railway and lighting construction work. A fall of forty feet rather incapacitated me for a time, and I was glad to go indoors on a Bell switchboard, at Minneapolis.

Fourteen years ago, Minneapolis had 2,600 telephones, connected to the most execrable switchboard in existence. In fact, it was in this city that the Bell company fought the trolley interests for the exclusive use of mother earth.

When the Independent company started its construction I used to hear the Bell officials say they would not let it operate. All of them seemed to feel that there was a divine power at Boston which could do anything!

Today, there are 35,000 telephones in Minneapolis. The Bell company did not stop the Home company even today, and 18,000 of these telephones in Minneapolis are connected with the Tri-State company's system.

I remember when one of our employes quit to work as wire-chief for the new company, our officials felt awfully bad about this man leaving such bright prospects! Later, I went up to Duluth and West Superior. They offered me more money.

But to show you how Bell companies felt toward each other twelve years ago—the Minneapolis Bell did not believe the Duluth Bell could afford to pay such a munificent salary—$100 per month.

Later I went to Purdue, to teach telephone engineering, ten years ago. The Bell company flatly refused to sell us even a push button, much less to give it away. You know how they do it today. So, at Purdue, we got along very nicely with Independent manufacturers' apparatus. This is merely to illustrate the growth of the business.

In connection with this—it was at Minneapolis that I wrote my first article for TELEPHONY. It was in the January, 1901, issue—the very first issue of TELEPHONY.

The second issue caused me great trouble. I was notified by Bell interests to cease my contributions. Today you find the Bell press bureau working overtime. And you occasionally read fine articles by Bell officials in TELEPHONY. Ten years does make a difference.

It was at Purdue that I became acquainted with the Independent telephone interests at fairly close range. I read a paper at the 1903 convention on the telephone and technical school—was even looked upon with suspicion as being a part of a Bell scheme.

It was at this meeting that Schlosser, of Gibson City, had a furious row with the convention. It seems that Schlosser had connected with the Bell lines at his little town. It was a terrible offense. Maledictions were hurled down upon his head, and he was ruled out of the convention.

That was only nine years ago. Compare today the at-

titude of our national convention. History truly has been made fast!

I don't remember much about the 1904 and 1905 conventions. They must have been so well satisfied with kicking the original Mr. Schlosser out that they merely came to Chicago to be eloquent, and then went home and forgot it. So I went back to LaFayette and reported nothing.

Strange that this is all I can remember of the achievements of our past telephone associations!

I confess, too, that at the time I had a feeling of sympathy for Schlosser. He merely said to the convention that whenever anyone built a toll line to him, he would drop Bell connections. But the entire convention was willing to let Schlosser die for a principle.

No one of this convention has ever shown any symptoms of dying for principles since.

It is possible that my memory is poor. As a historian, I am possibly a failure. But I do remember Schlosser and his terrible (?) crime. It put the crime of '73 in the shade!

As time went on, the next rabbit chased over the side lines was the Kellogg company. This problem vexed the association for several years. All other problems of main interest and importance were lost.

Nothing else would satisfy but a resolution calling for the ex-communication of a lone manufacturer. All this proved a fizzle, too.

The next thing we knew was a rumor of Independents and Bell getting together. And the famous 1910 convention!

In ten years this was the first practical idea. Fire-eaters had had ten years to do something and signally failed. Those ten years represent lots of expense money to Independent and Bell interests.

Today we stand in a peculiar position. There is no use in denying it, or hedging in any way.

To my mind most conditions are very favorable to a perpetuation of the business. I mean by this, a tendency to continue purchasing goods in the open markets.

Most states are pretty well cleaned up. The Bell company has almost been eliminated, with the exception of its long distance lines.

What would have happened ten years ago in a national Independent convention, if some one had predicted the conditions of today? He would have been expelled from the hall as a dreaded spy.

Well do I recall the earnestness of the convention doorkeepers, so eager to keep out cowans and eavesdroppers, and to let no one in who had evil thoughts in his heart.

It was all in the game and I am not finding fault. But is seems to me the war is over—at least I think one lone man is foolish to fight when there is nothing to fight for.

I know one thing with absolute certainty—Independent interests in certain localities ran to cover too soon. The Bell company would have had its troubles by this time if there ever existed a way for our Independent interests to hang together.

I am often told that no man can trust a Bell promise. And I am sure that I have seen countless Independent promises broken. Let us not forget the human nature element in the case, anyway.

If we had it to do over again, I don't believe the interests concerned would be a bit different. It's human nature and dog nature, too, to bark at squirrels and birds along the roadway of life, and be too tired to do anything when they reach their destination.

Let no one get it into his head that there is no room for any more Independent telephone conventions. The next one will be just as good as any of the former. There will be just as many telephone men out. But you will find the fire-eating element very quiet.

At the time that TELEPHONY was firing broadsides at the Bell company by cartoon and article, there was a necessity for creating a sentiment for a get-together movement.

But there was no use! The interests behind Detroit and Kansas City were bound to get out of the business. And there were numerous others in the same boat.

I don't blame any man for any actions. He is the sole judge of them. If a group of men get tired of a business, choose to get out and find a liberal purchaser, that is their affair.

We are a nation of traders, anyway.

We have to admit to ourselves that Bell conditions must change the same as ours. They have the same human nature as we have.

I have always disbelieved in the universal idea of telephone service on account of the cost of giving such service, and the difficulty in collecting rates sufficient to pay for it.

A locality comprises 97 per cent. of all telephone service advantage. Why put the telephone business in danger for the additional 3 per cent.?

If universal service is an economic thing, it will succeed. If not, then we go back to the local service idea, because a deficit alone is the measure of our distaste for any enterprise.

We can't dispute with truth. Nor can a group of big financiers.

Money is the most helpless thing in the world under certain conditions. In nearly every failure, you see the names of so-called money kings.

I have changed the tone of my writing from a destructive to a constructive plan. I don't particularly care whom I displease.

What in the world is the use of locking the stable door after the horse is gone? Likewise, what is the use of raising a row over such a thing as the Detroit sale?

The plant is gone—the money has been paid—promoters feel good and no doubt are planning to start in elsewhere.

I feel no despair over the loss of Detroit. It was an ill-conceived, useless thing. There was absolutely no need for it. The Michigan Bell company knew enough to develop Detroit because it had learned lessons from the Citizens, of Grand Rapids, and the Union, of Alma.

As long as these companies thrive, be sure that the Bell company will be on its toes.

So many words have been wasted in the telephone business. Possibly I have wasted more than any of you.

I have gone into disagreeable topics and have tried to clear up the atmosphere of general discontent.

I am truly fascinated by the telephone business. I wish for its success as a privately-owned utility. That very fascination makes public ownership a dangerous factor.

Absolutely universal Bell control will be quickly followed by public ownership. Only by giving each unit its share

of the burden can we ward off the wave of municipal service.

That is why I condemn the idea of universal control. It fouls its own drinking water, as it were.

I may be crazy and our business may be crazy. Our past behavior may have been insanity. The universal grand idea may or may not be insanity—I am not on any jury.

I could give you a long list of lunatics who have guided the world. Sane or insane, we can't get away from an economic law.

The telephone situation today is a matter of economic condition and not theory.

MORAL: The world do move!

A New Field for the Telephone.

Scarcely a day passes by without some one discovering a new and original use for the telephone in commercial or social life, writes S. E. Lester, in the New York Telephone Review (through the courtesy of which TELEPHONY reprints the article and the illustration).

Several months ago, the writer was requested to call on the manager of Lord & Taylor, one of the large New York City dry-goods houses. In the interview the manager stated that he was dissatisfied with the results he was obtaining from his present method of conducting their correspondence by the use of dictaphones, and had conceived the idea of displacing these instruments with the telephone. The manager did not know just how this could be accomplished, but was convinced, owing to past experiences, wherein the telephone company had worked out difficult traffic problems for them and had improved their service, that the company could plan some method and furnish the necessary equipment, etc., to enable him to use his idea to a practical advantage.

The traffic and plant departments of the company were immediately consulted and with their assistance a practical scheme was soon devised, and a proposition to meet the subscriber's requirements was submitted and accepted. The scheme and equipment now in operation are outlined as follows:

The subscriber has a private branch exchange system consisting of a five-position switchboard, forty-five trunk lines and 237 extension stations. Ten stenographers are employed in the conduct of the store's correspondence. These stenographers perform their duties in one large room. In this room, a specially designed table has been installed which is provided with five typewriting positions on each side, the typewriting machines being placed about eight inches below the surface of the table. A ten-inch panel extends down the center of the table and on this panel, immediately in front of each stenographer's position, an annunciating drop and a spring jack are installed. Each of the ten typewriting positions is equipped with a breast transmitter and a head receiver terminating in a plug. The spring jack circuits connect to a forty-line standard sub-switchboard which is located at the head of the stenographers' table, and this switchboard is connected to the main house switchboard by ten tie lines.

Prior to the installation of this equipment, it was customary when any one associated with the store desired to dictate, to send, either by telephone or messenger for a stenographer. As the stenographers were located in various parts of the store, considerable time was lost before one reached the point where the dictation was to be given Of course, as much more was lost in returning to her desk to transcribe her notes. With the equipment now installed, when the services of a stenographer are desired, the party wishing to give dictation merely lifts his receiver and says "Stenographer, please." His extension station to the main house switchboard is immediately connected by a tie line to the sub-switchboard in the stenographers' room. The operator answering the sub-switchboard glances down the stenographers' table and connects to the stenographer who is least occupied, and who immediately plugs into the spring jack with her head receiver and breast transmitter. This equipment permits both hands to be free and the stenographer can either take the dictation in shorthand or write it direct on the machine, as the circumstances require.

The equipment in question has been in service for some time, and the manager of Lord & Taylor told the writer that the results obtained in efficiency and as a time-saver are far beyond all his expectations.

Telephone Service in Pekin, China.

A telephone service is now officially organized in Pekin, says L'Electricien, Paris. Two central exchanges have been installed in the city, and they are fitted up for 6,400 subscribers. What is to be noticed is that both the exchanges and lines are of home manufacture, and the Chinese government is engaged in operating the telephone system.

There are already 3,000 subscribers in the Chinese and Tartar quarters of town, and the rest of the city will be wired up in the same way before very long. In the part of town containing the foreign legations, where there were already quite a number of telephones in use, these are now connected by extending the wiring as far as the central exchanges.

Direct Dictation by Telephone in a Big Department Store.

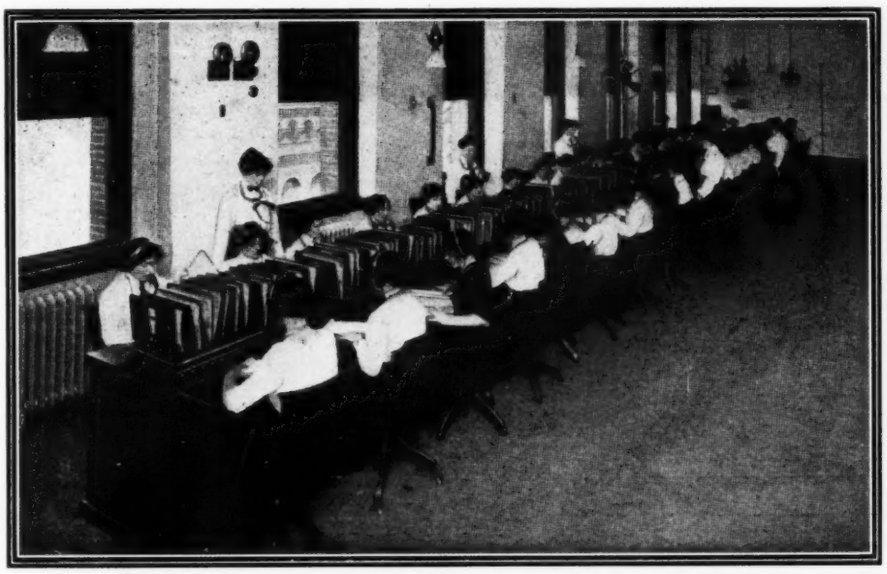
Points of Interest in Telephone Traffic Work in New York

How the New York Telephone Co. Handles Daily Nearly Four Million Calls from 800,000 Telephones Used by Over Two Million Persons—Abstract of a Paper Read Before the New York Telephone Society, Reprinted from The Telephone Review

By R. H. Boggs

The whole purpose from an operating viewpoint, for which a telephone company exists, is to give service.

It may be well at the outset to have clearly in mind some quantitative idea of what "delivering the goods" for the New York Telephone Co. means. It comprehends the handling each day of nearly 4,000,000 calls, from 800,000 telephones, used probably by over 2,000,000 different individuals. It involves the provision of a properly trained force to do this in over 400 central offices in this state and New Jersey. This work must go on throughout 24 hours of each day of the year, regardless of weather conditions or of the season. The "goods" must be delivered to man, woman and child, laborer, storekeeper, farmer, professional man, and merchant; to the educated and the illiterate; to the man who speaks the purest English, and to our newly arrived citizens who find their homes on the lower east side of this great metropolis.



"Information" Handles in the Aggregate About 70,000 Calls a Day.

You may be surprised to know that while we are sitting here, over 2,600 intelligent young women in these 400 central offices are "delivering the goods" and that during this present hour, over 125,000 calls will be handled by those faithful co-workers employed by the telephone company.

It is, of course, understood by all that the main function of the traffic department is the handling of calls. But the handling of calls by no means comprises all of the work of the department.

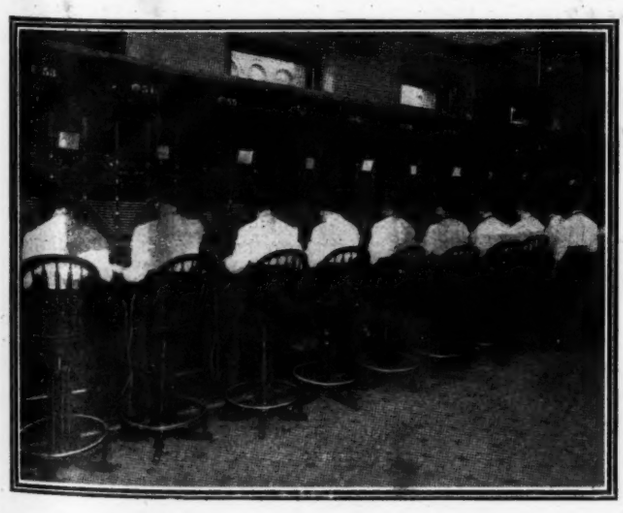
It is charged, with making such records of the calls which it handles, as will enable the company to correctly bill its customers and collect its revenue.

It is responsible for recommending the installation of switchboard equipment of suitable design, so that when the commercial department gets additional subscribers, the plant department may be able to connect them. This must be done sufficiently in advance so that it may be manufactured and ready for installation in time to furnish service when needed.

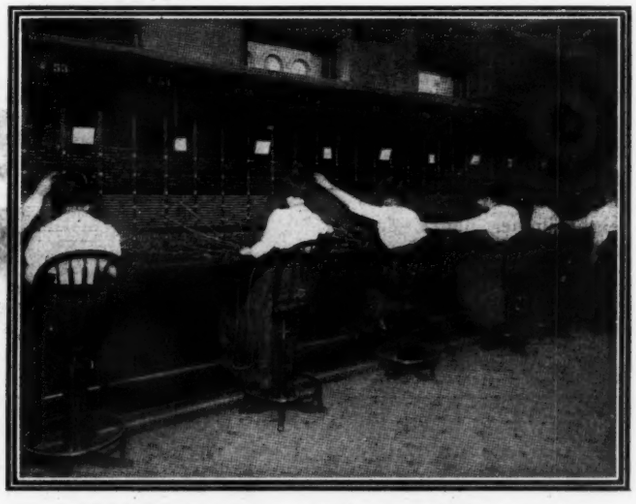
It must keep comprehensive records of the calls passing between its various central offices, so that it may study carefully and anticipate correctly the development of the business, and recommend the provision of an adequate number of trunk lines to handle the traffic.

It is responsible for the development of efficient operating methods to meet the varying needs of the service.

It exercises general supervision over the work of the 17,-



During the Busy Hours Every "Position" is Occupied.



The Number of Operators is Reduced in the Slack Hours.

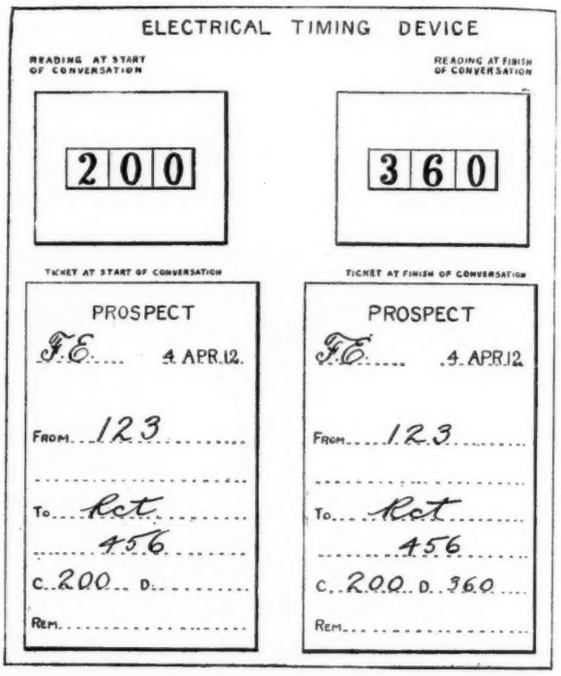
500 private branch exchanges in the system. It instructs their operators, suggests their operating methods and assists in the design of switchboards suitable to the needs of the various concerns.

Through its public telephone department, it locates and operates such company attended public telephones as may seem expedient.

The peg count is the monthly traffic record kept in the central offices showing the calls handled, the positions covered by operators and miscellaneous other traffic information.

In the early days, records of the calls which an operator handled were kept by giving her a small wooden peg which she placed in the zero number jack of a spare bank of multiple in front of her. As she answered a call, she moved the peg into the next higher number jack. At the end of the hour, after the clerk had noted the number of calls handled, the peg was put back into the zero jack and the process started over again, and so the name "Peg Count" was given to this traffic record.

Today, these records are kept by means of electrical or mechanical registers, or on tally slips, and the work of compiling and tabulating the information sent in from all central offices is done under the direction of the chief clerk of the traffic engineer.



Difference in Readings Indicates Number of 3-Second Intervals Elapsed.

Duties of Various Officials of the Traffic Department.

Under the functions of switchboard engineer is shown the item—"Schedules of Switchboard Conditions, which the traffic engineer calls his "Sailing Chart."

The traffic engineering department is responsible for recommending the installation of suitable equipment. This is one of the most important functions of the traffic engineer. There are switchboards in some 437 central offices, and as each installation is planned to last on the average only three years, additional equipment must be provided in about three central offices each week. The provisional estimate for 1912 provides for spending over $3,000,000, or almost $60,000 a week, for changes in the additions to switchboards.

Such work cannot, of course, be done in a haphazard fashion, and this chart enables the traffic engineer to do it systematically. It shows the present equipment of each office, the number of lines in service, the rate of growth as estimated by the commercial department, the actual rate of growth that is being obtained, and the date on which the existing equipment will be exhausted on the basis that the growth estimated by the commercial department will actually be realized.

Referring to the traffic engineering diagram, we look for a moment at the work of the trunk engineer. He is responsible, among other things, for studying the development of the business between the various central offices, for determining the trunking methods of operation which are economical, and for recommending the trunks to carry the traffic.

Routing instructions must be issued for the guidance of operators. There may be a half dozen or more routings by which a call could reach its destination, but there is

one best route, and the plant is provided on the basis that that route is to be used. These instructions must be in such a form that they can be readily referred to, so that the completion of any call, on which reference must be made to instructions, will be subjected to a minimum delay.

A routing bulletin containing the names of points most frequently called, is prominently displayed on the switchboard before each operator. In addition to this card, a small printed book is provided, which gives routing and rate information for some 2,300 other points in the down state territory.

Another bulletin, which is placed before all operators is the Fire, Police and Telegram Routing Bulletin. This not only shows the fire and police headquarters' numbers, but also the day and night offices to which calls for the Postal or Western Union Telegraph Co. are connected.

These bulletins are prepared in the traffic engineer's office in co-operation with the telegraph companies.

The importance of the work of the special study engineer under the traffic engineer is illustrated by the electrical timing device, installed experimentally in the Prospect central office, Brooklyn.

This is a very simple affair. In appearance, it is somewhat like a cyclometer used on a bicycle. One of these devices is installed on the keyboard between each two operators. It is actuated by an electrically driven master clock, and is moved ahead one count every three seconds, or 100 times in five minutes. Five minutes is the length of time which down state subscribers may talk on toll calls for the payment of one charge. The company is entitled to an additional charge for each five minutes, or fraction, which subscribers talk in excess of the first five minutes.

In handling toll calls, the operator notes on a ticket, as shown on the diagram, the reading of the device when the called subscriber answers, and again when they are through talking and hang up. If there is a difference of less than 100 between the reading taken at the start of the connection and the reading taken at the finish, one charge only is involved; if this difference is more than 100 and less than 200, two charges are involved, although in reality if the difference is less than 110, the subscriber is only billed for one message, as leeway of thirty seconds is given on all toll calls. It is a matter of very simple subtraction for the auditor to determine whether a subscriber should be billed for more than one message on any toll call.

WILLIAMSBRIDGE

FIRE CALLS

TREMONT 454 (BRONX)

PLAZA 640 (MANHATTAN)

POLICE CALLS

TREMONT 1300 (BRONX)

SPRING 3100 (MANHATTAN)

AMBULANCE CALLS

TREMONT 1300

TELEGRAM CALLS

WESTERN UNION

MEL. 373 – 7:30 A.M. TO 2:00 A.M.
ROT. 5000 – 2:00 A.M. TO 7:30 A.M.

POSTAL

MEL. 3509 – 8:00 A.M. TO 6:00 P.M.
BLY. 6700 – 6:00 P.M. TO 8:00 A.M.
AND ALL DAY SUNDAY

An Emergency Bulletin.

It has been demonstrated that by the use of this device, operators can time so accurately that we will be able to collect about 70 per cent. of overtime revenue which we have been losing.

The position of division traffic engineer, reporting to the division superintendent of traffic, has been created very recently. These division engineers maintain very close relations to the traffic engineer.

The position of manager or traffic chief is one which has grown greatly, both with respect to the size of the districts and the scope of the work done. In the earlier days of the company, it was thought necessary to have a manager for each large central office, and he concerned himself with the administration of the smallest details. But this condition has changed, the job has become bigger and broader, the details of the central offices are well cared for by efficient chief operators, and today we find the central office managers have committed to them the responsibility for the service in from six to twenty or more offices, depending upon their size and location, and in our very largest districts they are giving service to as many subscribers as there were in the entire New York company ten or eleven years ago.

To them is entrusted the responsibility for work which is many sided—work which demands engineering ability, problems which can be solved satisfactorily only by careful investigations of the most analytical sort, the administrative work in carrying out these plans, and to them also is entrusted the responsibility for the just and tactful handling of over ten thousand members of the operating force, whose faithful and intelligent co-operation is so essential to the success of our business. The manager must indeed be an all around man.

The managers are responsible for the service in the agency offices. In this company there are 120 such of-

April 1st, 1912

Central Offices	LINES: Line Equipt. in Use 4-1-12	LINES: GROWTH: Est. for Year 1912	LINES: GROWTH: Actual 1-1-12 to 4-1-12	LINES: GROWTH: Est. 4-1-12 to 1-1-13	LINES: GROWTH: Act. 1911	LINES: Est. Line Equipt. in Use 1-1-13	PRESENT EQUIPMENT: Type	Line Equipt.	POSITIONS: "A"	POSITIONS: Com. Trk.	POSITIONS: Mgr.	Lines Operative	Will Last Until	ADDITIONAL EQUIPMENT: RECOMMENDATION: Due	RECOMMENDATION: Dated	Completion Scheduled	TOTAL EQUIPMENT WITH ADDITION: Type	Line Equipt.	POSITIONS: "A"	POSITIONS: Com. Trk.	POSITIONS: Mgr.	Lines Operative	Will Last Until	REMARKS
Broad	5501	150	8	142	-23	5663	(a) CBN	7000	83		83	5970	1-1-15											
Hanover	653A	30	21	9	8	862																		
Rector	12469758	456	224	232	362	7207	CBPM	10200	116		56	8600	1916		4-11-10	6-8-12	CBPM	10200	143		56	9700	1920	Will take Cortlandt growth
Cortlandt	1947241	444	-14	458	338	7699	(d) CBN	9000	89		32	7200	10-1-12											Growth will be taken in Rector
John	5+5199	200	66	132	283	5331	(a) CBN	6300	67		32	5300	11-1-12											Growth will be taken in Beekman
Barclay	15798	100	19	81	9	1660																		
Beekman	5+5828A	155	40	115	45	3943	CBPK	5600	61		38	5000	1919											Will take John growth
Worth	3077	150	55	95	122	3372	CBPM	5600	56		38	4110	1917											
Franklin	5+5920	165	16	149	103	4069	(f) CBM	6300	61		29	5560	1924											
Orchard	1846390	750	145	605	515	6987	(g) CBM	8800	R 46		26	8100	7-1-14		3-1-11	12-21-12	CBPM	8800	46		26	8350	11-1-14	
Spring	13+8753	200	- 27	227	190	8980	CBPM	10200	82		40	9450	6-1-14		12-14-11	10-19-12								120 out.tk.lks. 200 inc.tk. cords
Chelsea	3546672	500	191	309	606	6981	CBPM	7600	61		30	7200	9-1-13		1-1-11	11-2-12	CBPM	10500	104		40	9975	1919	
Stuyvesant	1745591	200	44	156	78	3547	CBPM	5600	49		26	5230	1921		5-25-11	9-30-12								C.C. keys
Gramercy	15+5926	600	129	471	510	6961	(h) CBM	7000	61		25	5950	10-1-12		7-9-11	10-12-12	CBM	7000	76		27	6650	12-1-13	
Madison Square	38+8743	1000	440	560	925	9363	CBM	10400	86		42	9300	1-1-13		4-15-10	7-15-12	CBPM	10500	93		42	9700	1-1-13	Transfer to be made to new M.H.
Greeley	10+56500	500	131	369	329	6229	(k) CBM	7000	68		29	6460	9-1-13											
Murray Hill	22808														8-15-11	12-20-12	CBPM	8200	67		26	7600		
Bryant	917529	500	235	265	666	7594	CBPM	8800	64		34	7200	9-1-12											Growth to be taken in Greeley until M.H. is
Columbus	33+7822	540	107	393	405	8215	CBPM	10500	61		34	6400	9-1-13											
Plaza	5146493	350	121	219	262	6712	CBPM	8000	59		28	7760	12-1-14											
Lenox	10246913	350	197	153	372	7066	CBPM	8000	43		24	7400	11-1-13											
Schuyler	6419721	300	43	257	278	3978	CBPM	5600	32		18	5120	1917											
Riverside	8498	600	177	423	836	8921	CBPM	10500	58		34	9360	11-1-15											
Morningside	7481	600	147	453	462	7934	CBPM	9100	50		24	8420	3-1-13											Transfer to be made to Harlem
Harlem	5+5516	500	146	354	329	5079	(n) CBM	8000	50		28	7400	1-1-16											
Audubon	4+6091	650	165	487	643	6578	CBPM	8000	46		22	7400	3-1-14											
Melrose	5+6504	1000	249	751	954	7395	(e) CBM	8400	55		22	7790	5-1-13		3-15-12	4-26-13	(e)CBN	10500	53		22	9700	4-1-15	
Tremont	5+4657	900	208	692	828	5349	CBM	R5200	28		17	4600	9-1-12		2-15-11	9-18-12	CBM	7000	57		17	6650	6-1-14	R Advance equipt. 7-15-12
Westchester	34694	150	24	126	-97	829	CBM	1400	7		3	1302	1916											
Kingsbridge	21574	60	10	50	24	424	CBM	600	3		2	$ 540	1915											
Williamsbridge	24636	190	22	168	101	804	CBM	800	4		2	760	10-1-12		12-29-11	9-28-12	CBM	1611	7		3	1540	11-1-16	
City Island	102	10	1	9	8	111	M	140	2			120	12-1-13											

* - Murray Hill lines working in Greeley included in Greeley figures.

(A) Hanover lines working in Beekman included in Beekman figures.
(B) Barclay lines working in Rector included in Rector figures.
(c) Pos. 1-74 1400-6299 mult. * 75-84 no multiple
(d) 800-5799 multiple
(e) 1400-6299 multiple
(f) 1400-6299 multiple
(g) Pos. 1-23 4000 multiple * 24-40 no multiple
(h) 1700-6299 multiple
(k) Pos. 1-41 1400-6299 multiple * 42-68 no multiple
(n) Pos. 1-26 4000 multiple * 27-50 no multiple
(o) Pos. 1-43 7200 multiple * 44-55 no multiple

‡ Limited by answering jacks

The Traffic Engineer's "Sailing Chart," Which Gives a Summary of Switchboard Conditions.

fices. An agency office is one where we do not employ the operators directly but make an agreement with a suitable agent to operate the office for a stipulated sum. Such offices are, of course, confined to relatively small places. Until the last few years they were generally located in drug stores or in stores where the operating became part, and often a negelected part of the work of the clerk.

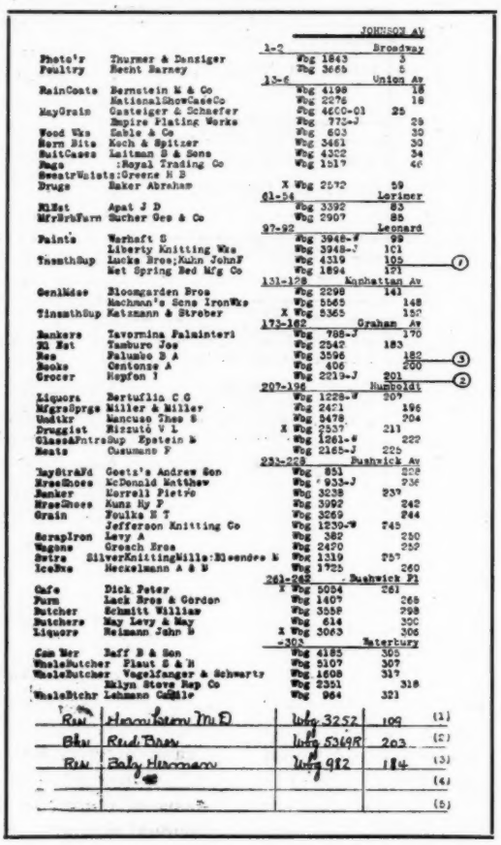
The present policy is, where possible, to rent a dwelling house near the telephonic center of the town and secure a suitable family as tenants and operating agents. Then we have the whole matter under our control, for in case the service is not satisfactory, we can proceed to get a new tenant and agent, and in the meanwhile, if necessary, send operators from a nearby town to tide over the critical period. The responsibility of renting the house and selecting and training the agent, falls upon the central office manager.

The public telephone department has a force of over 400 employes, and operates attended public telephones at 140 locations in and around Greater New York, Jersey City and Newark. From these stations upwards of 30,000 calls are made each day.

It maintains an employment bureau and a training school for office boys and messengers, for all departments of the company in the metropolitan area.

This department has found its latest field for public telephone activity on the large transatlantic liners sailing out of New York. On several boats of the Cunard Line, coinbox telephones have been installed. As soon as the steamer reaches her pier, and before the passengers start to come ashore, the public telephone department's attendant goes aboard carrying with him a flexible cable, one end of which is plugged into a jack box on the wharf and the other end of which he plugs into a jack box on the steamer, and connects the coinbox telephone with the central office. Passengers are then in a position to immediately telephone to home, hotel or office.

It probably seems to be a very simple matter to call up "Information" and say: "Central, what is the telephone number of Miss Elsie Jones? She is visiting her brother-in-law at 782 Fifth avenue, but I can't think what his name is." Thirty seconds go by and we hear the information operator say, "The number is Plaza 786; one moment, please," and the central office operator is signaled, and in a few seconds more connection is established. It all seems very easy and natural, and even some well informed telephone men might imagine that this work is taken care of by half a dozen operators with a few simple records, but actually, what has been necessary to make the answer to this request possible?



A Page From an Information Address Book.

At eight different points in Manhattan, Brooklyn and New Jersey, you will find central information bureaus, each with an operating force of from forty to seventy people, engaged in handling in the aggregate about 70,000 information calls a day.

A sample page of the Brooklyn address book shows the subscribers arranged, not according to their names, but according to their addresses. The streets are arranged alphabetically, and the cross streets are shown, as well as the street numbers, so that the information operator can often tell the telephone number even when all one knows, for example, is that the party wanted works for a grocer on Johnson avenue near Humboldt street and you think the street number is 201.

Then, too, we must think of our information system, not as composed merely of eight separate information centers, each handling the traffic from half a dozen or more large central offices, but collectively, for each bureau is connected with every other bureau by direct tie lines for handling those calls which involve more than one district, and thus each of the parts is welded into a single unit.

Perhaps the most serious difficulty in connection with the information work, is unnecessary use of its facilities by the public. For the year 1911 information service for the down state divisions cost about $185,000. About 28 per cent. of the calls handled, could have been answered by the subscribers from their own directories, so

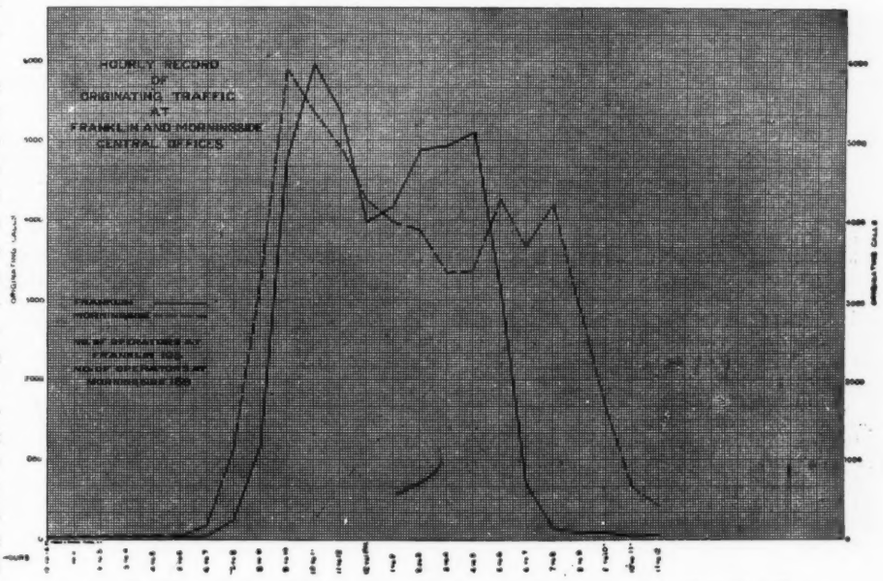
FROM	TO											
	Other Prospect Subscribers		Other Brooklyn Subscribers		Subscribers in Manhattan		Subscribers in Newark Jersey City Etc.		Subscribers in Lakewood Stamford Etc.		Subscribers at Long Distance Points	
	Calls	Units	Calls	Units	Calls	Units	Calls	Units	Calls	Units	Calls	Units
Flat Rate Individual Line	245	1.00	163	1.50	102	2.40	92	2.65	188	1.30	188	1.30
Flat Rate Party Line	245	1.00	163	1.50	91	2.70	83	2.95	153	1.60	153	1.60
Message Rate Indiv.Line	181	1.35	132	1.85	102	2.40	92	2.65	188	1.30	188	1.30
Message Rate Party Line	148	1.65	114	2.15	91	2.70	83	2.95	153	1.60	153	1.60
Public Tele. Indiv.Line	181	1.35	132	1.85	102	2.40	92	2.65	188	1.30	188	1.30
Public Tele. Party Line	148	1.65	114	2.15	91	2.70	83	2.95	153	1.60	153	1.60
Pre-pay. Coin Box Indiv.Line	231	1.06	157	1.56	66	3.70	62	3.95	188	1.30	188	1.30
Pre-pay. Coin Box Party Line	231	1.06	157	1.56	61	4.00	58	4.25	153	1.60	153	1.60
Post-pay.Coin Box Indiv.Line	98	2.50	82	3.00	66	3.70	62	3.95	188	1.30	188	1.30
Post-pay.Coin Box Party Line	98	2.50	82	3.00	61	4.00	58	4.25	153	1.60	153	1.60

Sample Table of Equivalents Showing Calls an Operator Should Handle in the Busy Hour.

that 28 per cent. of this amount, or $51,850, was expended last year for information service which the company should not have been asked to give.

The information bureau is designed primarily to answer calls which cannot be found in the latest issue of the directories. It seems entirely reasonable that subscribers should at least make an effort to find the number they wish in the directory, before calling "Information."

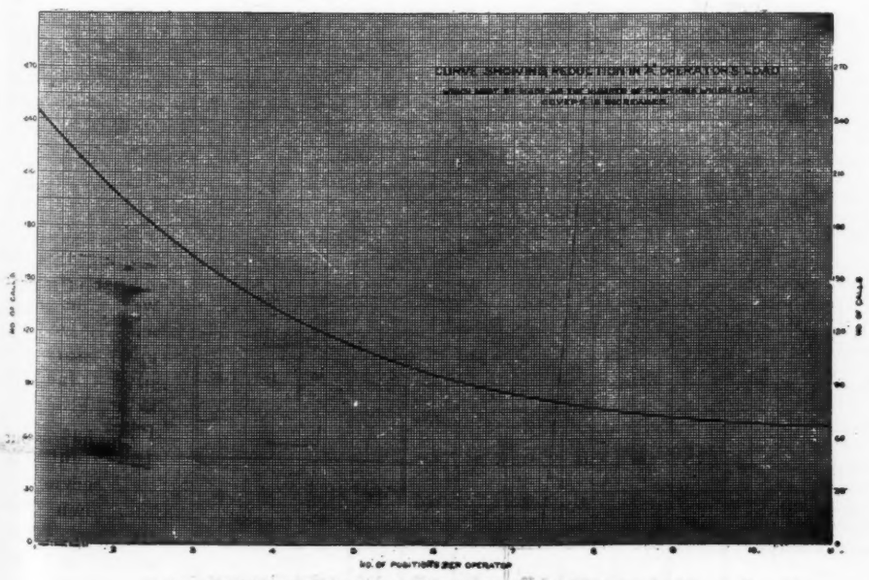
Many visitors to a large central office ask as one of their first questions: "How many subscribers does an operator handle?" When the reply is made that the number varies, that an operator handling 100 subscribers in this office may be just as busily engaged as when she is handling 200 in some other office, they begin to appreciate that it is calls which an operator handles, not subscribers. The question which naturally follows is. "Then how many calls can an operator handle?" When they are told that this same operator handling eighty calls an hour may be working just as hard as when she is handling 180 calls in an hour in some other office, the usual inquirer looks mystified and gives up, or says, "Oh! yes, I see," and looks wise.



Some Traffic Curves of New York Exchanges Showing Originating Traffic.

An operator's capacity cannot be expressed simply in terms of the subscribers or of the calls she handles, for there are many classes of subscribers—flat rate, message rate, coinbox, individual line and party line. There are many kinds of calls—calls to numbers in the same central office, in other offices in the same borough, in other boroughs, in other towns, in other states. When you stop to consider that a different amount of labor is required on each one of these different kinds of calls from these different classes of subscribers, you will appreciate that the task of measuring the work which an operator can do is not a simple one. And yet you will understand that it is highly important when I state that if every call handled in Manhattan each day involved as much labor as that of handling a call from a coinbox telephone to even such nearby places as Jersey City or Brooklyn, it would be necessary to add 1,800 switchboard positions, employ 2,800 additional operators and increase the total annual expense over $2,000,000.

This matter of determining the loads which operators should be required to handle is a fundamental one, and is one to which a very great amount of time and study have been devoted. As a result of this study, checked by years of experience, we have developed a table of "labor equivalents" or "labor units" which shows the relative amount of labor involved in handling each of these various kinds of calls as compared with handling the "simplest kind of call." This "simplest kind of call" which we thus use as a basis of comparison, is one made by a subscriber on an individual flat rate line for a number in the same central office.



Curve Showing Reduction in the "A" Operator's Load.

The accompanying table shows the number of calls of the various classes which an operator in the Prospect central office in Brooklyn is called upon to handle, and the labor value given to each class.

An operator is expected to handle 245 of this "simplest kind of call" in the hour, and the labor value of each call is one. These labor values vary all the way from 1 to 4.25. For instance, the "labor value" of a call from a coinbox line to another Brooklyn subscriber is 3. This means that it takes three times as much labor to handle such a call, as it does to handle "the simplest kind." This being so, it follows that an operator can handle only one-third as many calls, or 82 in the hour.

On "this simplest kind of call," the least amount of labor is involved, because the operator who answers the call completes it without the assistance of any other operator, and no record of the call is necessary. But on many other classes, additional labor is required before the call can be completed, such as the securing of the letter of the calling party, the passing of the called number to a second operator, and the writing, and

(*Continued on page 442.*)

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Nevada Railroad Commission on Wages.

In handing down an opinion in the matter of the wages paid switchboard operators by the Pacific Telephone & Telegraph Co., the Nevada Railroad Commission takes the company rather severely to task. The decision, which is interesting by reason of its novelty, follows:

Referring to the wages that are paid to the girls employed by your company as switchboard operators at Reno and elsewhere in Nevada, we beg to advise that after a careful and long continued investigation, the commission is convinced that they are grossly underpaid and that by reason of same, there is very little incentive for an operator to remain and become a valued and high class employe—thus the service necessarily cannot be and is not maintained at as high standard as it should be.

The wages paid to your operators at Reno and other points in Nevada cannot fairly be compared to the wages paid in other states, for the reason that the cost of living is considerably higher than in adjoining states. That this is so, is made clear by reference to the uniformally higher scale of wages paid to employes in practically every line of business within Nevada, than is paid for similar employment in other states.

Without reference to the wages paid to the members of skilled crafts in Nevada, it is enough to direct your attention to the fact that the cheap foreign labor, which is employed in Nevada at rough labor, wherein no high degree of skill or intelligence is obtainable, are paid on the average, not less than $2 per day.

As against this, your operators must be, and in the main are, highly intelligent and capable of becoming expert employes, if the inducements surrounding their position are such as to inspire co-operation and make it worth while to continue in the service. The wages paid are, however, too low to encourage and promote, long and continued service, indeed it seems that the system of handling the operators is such, that it rather encourages them not to remain longer than is necessary to secure better employment elsewhere.

For example: We first state below the wage scale which your company pays its operators at Reno:

Operators, beginners, $25 per month; after three months service, $27 per month; after six months service, $30 per month; after nine months service, $32.50 per month; after eighteen months service, $35 per month; after thirty months service, $40 per month.

With reference to the statement last made, that conditions were such as to discourage the operators from remaining in the service any length of time, the commission discovered, when investigation was made some time since, that there was only one operator employed in the Reno office, who was securing the maximum of $40 per month and that the majority of the twenty-two operators employed, were receiving between $25 and $30 per month. That this condition of affairs was brought about largely by reason of the fact that a great number of operators, after having served from three to six months, were denied the increase in salary which was due them, as shown by the above scale, has the natural effect of causing the operators to become dissatisfied and to resign as a result thereof.

We dislike to believe that the application of the wage scale in this manner, is by direction or intention on the part of your company, but in any event, it has the effect of requiring the major portion of your operators to work for a grossly inadequate compensation, which, when the high cost of living in Nevada is considered, will hardly afford more than enough to keep body and soul together and nothing whatever for clothing and recreation.

This condition also has the effect of lowering the standard of service, which is manifest upon its face when we consider that because of the constant change of operators, the service necessarily cannot be maintained at as high a standard as if the conditions were such as to induce operators to remain in the service over long periods of time.

In the interest of an improved and higher standard of service to the patrons of your company at Reno, Sparks and other offices in Nevada, we respectfully request that you increase the operator's wage scale in the following proportion:

Operators, beginners, $40 per month; after six months service, $50 per month; after twelve months service, $60 per month."

The opinion was written by Dr. J. F. Shaughnesssy, first associate commissioner. The company has not indicated what, if any, steps it proposes to take in the matter.

Demands Fair Competitive Rates.

The United Home Telephone Co., of Oceana and Mason counties, has filed a petition with the Michigan Railroad Commission requesting the board to force the Oceana Farmers' Mutual Telephone Co. to cease operating in its territory and to increase rates of tolls on long distance calls.

The petition sets up that the petitioning company has been doing business in the two counties for sixteen years, and that it has operated an exchange in the village of Pentwater during most of that time. Until recently the company has been furnishing its Pentwater patrons with free service to the villages of Hart, Crystal and Walkerville.

It now claims that it is necessary to charge ten cents for this privilege to put the plant on a paying basis. Otherwise it would be necessary to increase the telephone rates.

The second paragraph of the petition sets up that the Oceana Farmers' Mutual is connected with the Michigan State Bell company, and that the latter company is furnishing the long distance service to the patrons for nothing so as to drive the petitioners out of business. It also charges that the company is furnishing instruments to its patrons at such a low figure in an effort to destroy competition that the company cannot hope to pay expenses.

The United Home asks the commission to force the Mutual company to increase its rates and to charge the usual long distance tolls. It is the first time in the history of the commission that an effort has been made to increase the rates of a rival concern.

Two Michigan Companies Would Combine.

Application has been made to the Michigan Railroad Commission for permission for two more telephone companies, the Southern Michigan company, of Burr Oak, and the Three Rivers company, to merge.

An agreement has been entered into for the Southern Michigan to buy the Three Rivers company and all that is necessary now to complete the deal is the commission's permission. The Southern Michigan operates in the counties of Branch and Hillsdale, in the southern part of St. Joseph county and in northern Indiana. It is capitalized at $1,000,000 and has $115,000 bonds outstanding. The Three Rivers company operates chiefly in St. Joseph and Cass counties, and has about 2,600 subscribers.

Hearing on Rates at Manistee, Michigan.

The Michigan Railroad Commission has held a preliminary hearing at Manistee, Mich., upon the proposed increase in rates in that city by the Michigan State Telephone Co. Matters were gone over in a general way and a postponement of a month was taken to permit the commission to thoroughly sift conditions.

The attention of the Bell officials was called to the fact that the rates in Manistee were higher than those in other towns in Michigan where conditions were similar, to which

the reply was made that competition existed in those localities, hence the comparison was not a fair one. The 4½ per cent. royalty on the gross receipts paid to the American Telephone & Telegraph Co. was also commented on. The Bell representatives declared that the item could be successfully defended.

Mountain States Denver Rights Assailed.

Judge George W. Allen of the district court in Denver, Colo., has overruled the demurrer of the Mountain States Telephone & Telegraph Co. to the quo warranto proceedings instituted by the Business Men's Association, the purpose of which is to compel the company to come into court and prove by what legal right, if any, it continues to use the streets and alleys.

The case was brought early in May and was prepared by Omar E. Garwood, attorney for the Business Men's Association. Clinton Wilson, a member of the organization and a taxpayer, signed the complaint. The action was brought in the name of the district attorney, by his consent.

The corporation was formerly styled the Colorado Telephone Co., the name having been changed under reorganization to the Mountain States Telephone & Telegraph Co.

The old company's franchise rights were assigned, upon reorganization, to the new concern. The statutes of Colorado hold that a franchise right is not assignable except with the consent of the grantor, and gives the latter the right to impose terms. Garwood claimed that the consent of Denver city officials was not obtained in the transfer of the telephone franchise; otherwise its terms, including the fixing of a schedule of rates, would have been dictated by the city.

"I have any number of decisions, in addition to our own statutes, showing that a franchise right cannot be assigned in the manner in which the one under discussion was transferred," Garwood told the court, "and we are prepared to prove that the consent of our municipal authorities was not obtained, or even asked for. Our present Colorado statutes also provide that public corporations cannot occupy streets and alleys of a municipality without proper consent."

Judge Allen allowed the telephone company attorneys thirty days in which to prepare their cases and answer the quo warranto citation. This puts the burden of proof upon the shoulders of the corporation, and unless its attorneys can show to the satisfaction of the court that a legal right to use the streets and alleys exists, the company must either secure permission to continue doing business or must cease operations in Denver.

Another Hearing on Albany Rates.

The New York Public Service Commission has announced a hearing in Albany on October 1, when the subject of telephone rates in Albany will be taken up at length. The commission received from Governor Dix correspondence on the part of John A. Dugan for the Albany Civic League, in which Mr. Dugan related to the governor a short history of the controversy extending over a year and asked him to ascertain why the commission was so slow in dealing with the matter.

Upon the receipt of the communication from the governor the commission announced a date for the hearing. A wide interest in the situation at Albany has been worked up by an agitation against the alleged excessive rates started by William A. Choate, a local business man of Albany.

Sues to Obtain Indiana Franchise.

The Independent Telephone Co., denied a franchise by the Evansville, Ind., board of public works and city council early this year, has filed a mandamus suit in the superior court asking that the city officials be directed to grant the company franchise rights. Members of the board of public works, council and the mayor are made defendants.

It is alleged that the stand of the city officials is contrary to the constitution of the state of Indiana. The directors of the Independent company are given as E. B. Oslage, H. T. Cooper, M. H. Gatsch, Paul J. Fischer and E. Q. Lockyear.

Reference is made in the suit to the attempt made by the Independent company to secure privileges from the city. On January 28, this year, the company filed a petition with the board of public works for a franchise in the city on the same conditions and terms granted to the Cumberland Telephone & Telegraph Co. The company offered to put up a $20,000 bond. A contract draft was also presented. When the board refused a franchise the petitioners appealed to the mayor and council.

The company offered to install automatic equipment and the petition presented to council was signed by 500 residents. The petition was also signed by companies having Independent franchises in Henderson, Mt. Vernon, Grayville, Mt. Carmel, Princeton, Oakland City, Petersburg, Huntingburg, Rockport and Louisville.

The defendants in the suit are summoned to appear in court today (Saturday).

C. & P. Bell Answers Flat Rate Petition.

The telephone rate dispute in Baltimore between the Protective Telephone Subscribers' Association and the Chesapeake & Potomac Telephone Co. has been again taken before the Maryland Public Service Commission in the form of an answer by the telephone company to the action brought by the association.

The proposed continuation of existing contracts for flat rate business telephone service to April 1, 1913, was opposed by the company in its answer. The company stated in substance that the petition, if granted, would practically open the whole question of telephone rates which was decided by the commission in its opinion of April 25 last and which prescribed the present rates.

For the very reasons given by the commission in that ruling the company argued that the petition should not be granted. That the commission has ruled on the points made by the association is pointed out and the matter is now settled. To allow another hearing, it was claimed, would be to bring out nothing which has not already been before the commission and duplicate what has already been done.

The commission will take the reply under consideration and decide, if advisable, to order another hearing or deny the petition, which latter would let the matter rest as it now is.

Bell Franchise Up Again in Des Moines.

James R. Hanna, mayor of Des Moines, Iowa, has written a letter to E. G. Conger, local manager for the Iowa Telephone Co., asking him why the company had taken no steps towards procuring a franchise in that city. The mayor announced that he was willing to give the company ample time in which to accede to his recommendation, but that, if no answer was forthcoming to his letter, he would take drastic steps in the matter.

To Sue for Franchise Annulment.

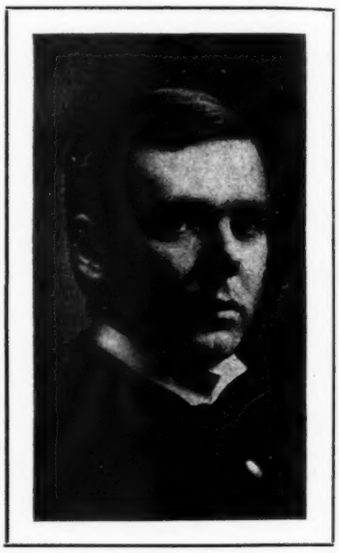
The city council of Santa Fe, N. M., has instructed the city attorney to file suit for annulment of franchise against the Mountain States Telephone & Telegraph Co. on the ground that the company has failed to live up to the terms of the franchise. It is claimed the company has not installed a fire alarm system as agreed; that it has raised its rates without authority, and that it has failed to furnish adequate service.

A Quartet of Men Prominent in the Telephone Field

STEVENSON E. WARD, director and member of the executive committee of the Mansfield Telephone Co., Mansfield, Ohio, is also assistant cashier of the National Bank of Commerce, New York City, to which office he was elected on February 1, 1912. Mr. Ward was born in Mansfield July 22, 1880. He completed his education at the University of Michigan. While attending the grade schools of Mansfield, and during vacation periods, he occupied various clerical positions in the Bank of Mansfield, of which his father, M. D. Ward, had been an officer since its organization. After leaving the university, in 1902, he became interested in the Mansfield Telephone Co., of which he was made manager, occupying that position until the first of 1907, when he went to the Bank of Mansfield as cashier. From there he was called to New York by the National Bank of Commerce. While no longer actively at the head of the Mansfield company, Mr. Ward has not relinquished his holdings in it. He has served as a director of the national Independent association and has also been prominent in the Ohio state organization.

ALLEN W. SURRELL, manager of the Home Telephone Co., Dayton, Ohio, and district manager there for the United States Telephone Co., was born in Sulphurgrove, Ohio, September 27, 1879. He was educated in the grade and high schools and, on April 12, 1899, he entered the employ of the American Telephone & Telegraph Co., at Phoneton, Ohio, as relief operator. On August 1, 1899, he became night operator at Phoneton and, on March 1, 1902, he was transferred to Cincinnati, Ohio, as night chief operator. On May 1, 1904, he resigned to take up another line of work; on January 1, 1905, he was made assistant to the traffic manager of the United States Telephone Co., at Cleveland. He left this position a year and a half later to go with the Central Home Telephone Co., at Louisville, Ky., as traffic manager. Later he returned to the United States company, whose general offices were then at Columbus, as special agent. He was appointed manager of the Dayton Home and district manager of the United States on May 13, 1912. Mr. Surrell is a member of the I. O. O. F.

H. R. VAN DEVENTER electrical and sales engineer for the Sumpter Telephone Mfg. Co., Sumpter, S. C., is well known in the telephone field as a frequent contributor to TELEPHONY and other technical trade papers, and as the author of "Telephonology." He is also the author of the series of articles entitled "Practical Telephony for the Practical Exchange Manager," now appearing in this paper. After completing a collegiate education, obtaining the degrees of B. S. and E. E., Mr. Van Deventer took up general engineering work. He was employed by a number of the larger operating companies and for fifteen years devoted himself to the practice of his profession. Forseeing a large and widening field in the South, he later identified himself with the Sumpter company. Since then he has specialized in the manufacture of telephone apparatus, in which his long and varied experience in the operating field has greatly aided him. Mr. Van Deventer is a registered patent attorney and a member of the various engineering societies. As a contributor to the trade press he has demonstrated a marked ability to write entertainingly and instructively.



HARRY E. DAVIS, plant superintendent of the St. Joseph Home Telephone Co., St. Joseph, Mo., became night operator for the Wisconsin Telephone Co., at Waupun, Wis., while attending school in that city, in 1898-9. The following year he went with the Waushara County Telephone Co., at Berlin, Wis., as troubleman and night operator. In 1901, he became troubleman and switchboard man for the Dane County Telephone Co., at Madison, Wis., where he remained until 1905, when he returned to Berlin as secretary, treasurer and manager. The next year he resigned to become wire chief for the Home Telephone Co., at Joplin, Mo., where he was later advanced to superintendent of operation and equipment and, still later, took over the construction work. From there he went, in 1909, to the Topeka (Kans.) Independent Telephone Co., as superintendent of operation and equipment, remaining two years, when he assumed similar duties for the St. Joseph company. Mr. Davis was born in Fond du Lac, Wis., August 18, 1882, and obtained his education in the grade and high schools of Waupun, Wis.

Regulation of Public Utility Companies by Commission

Chairman of Wisconsin Railroad Commission Reviews Some of Main Divisions of Work of That and Similar Bodies and Their Relation to the Public Welfare—Abstract of an Address Delivered Before Indianapolis Board of Trade

By Hon. John H. Roemer

The necessity for intelligent regulation of all corporations and individuals rendering public utility services seems to be universally recognized. With the increase of population and the territorial expansion of our cities and villages, the importance of the public services is emphasized. Water, under pressure, gas, electricity, the telephone and the street railway are, at the present day essential to the health, comfort and prosperity of the inhabitants of a modern municipality of any considerable size, and vast sums of money are invested in plants rendering these various municipal services.

Since public utility plants can neither be constructed nor operated except by virtue of a grant from the municipality or state, it is vital to both the owners of such plants and the public that the rights of each and the corresponding duties of the other in respect to the public functions of the public utility be clearly defined, and maintained in a spirit of fairness and justice to both parties. These obligations have generally been prescribed in the franchise granted by the municipality as a state agent or by the state itself conferring upon the grantee the right to construct, maintain and operate such a plant.

Flexibility of Franchises a Necessity.

But as the term of a franchise must of necessity be for a long period in order to induce capital to invest in the enterprise, experience has demonstrated that it has been impossible to satisfactorily fix terms and conditions of the franchise to meet unforeseen and unforeseeable exigencies which arise in the progress of time from many causes.

No one can prophesy the changes in the arts embraced in public utility services, the developments and necessities of the communities served or the requirements of the utilities to perform their functions under changed conditions. In the last few years, the enormous increase in cost of material and labor which enter into and become part of the cost of the service which the public utility is obliged to furnish is an element that has not always been counterbalanced by the economies resulting from new inventions and increased business, and unless the charges for the service could be increased in such event it would result, in case of the weaker utility, either in an impairment of the quality of the service or in financial embarrassment of the corporation or individual rendering the service.

As an illustration of another burden that is often cast upon a utility and which may not be anticipated when the franchise is granted, we may refer to the advancement in the art of telephony, which within a very few years has been little less than marvelous. Costly telephone equipments have been scrapped and entire systems reconstructed to meet the public requirement for the best service. Under the circumstances it is not at all strange that all attempts to rigidly prescribe in detail the obligations of the public utility to the public and vice versa during the life of a franchise have generally met with signal failure.

To meet existing conditions, attempts have frequently been made to change the terms of the franchise. This has often resulted in engendering animosity between the public authorities and the management of public service corporations. The negotiations have not always been free from the suspicion that improper methods have been employed to induce those representing the public in the transactions to consent to terms and conditions detrimental to public interest. As a result such public service corporations become a factor in local politics, and questions involving the most important interests of both the public and the corporation have become issues in local political campaigns. Such issues often involve economic laws and sound business principles, which cannot be determined by the votes of an uninformed electorate. These unnecessary conflicts between the public and those rendering public services are the cause of more corruption in municipal government than anything else.

Students of economic science have, for many years, been endeavoring to devise a limited franchise which would be adequate during the term thereof to meet the requirements of the public as well as those of the public service corporations, but they have found it impossible to frame a model franchise of any character based upon sound economic principles which could either be limited in time or could prescribe definitely the charges to be exacted or the quality of the service to be rendered during the life of the franchise. Some have advocated the granting of short time franchises, but such franchises of necessity impose an unnecessary burden upon the public. If a franchise is to be limited in time, provision must be made for its amortization. This compels the public not only to pay a fair return upon the investment during the life of the franchise, but also to provide a sinking fund which, with the scrap value of the plant at the termination of the franchise, is equivalent to the original investment.

Indeterminate Franchise, with Restrictions Best.

Others have advised the adoption of franchises for long periods of years, reserving to the municipal councils the right to fix rates and establish standards of service at definite intervals or from time to time at the will of the councils. The general experience under franchises of this character has not been such as to warrant their commendation. Intelligent action on the subject by a common council has been rare. The expenditure of large sums of money by some of the larger cities to ascertain all the essential facts necessary for intelligent and lawful action on the part of common council invested with power to establish rates, has been more frequently wasted than profitable, as the facts thus acquired have generally been ignored and action taken which was either prompted by prejudice or based upon ulterior political considerations. Litigation necessarily followed which involved the further outlay of large sums of money on the part of the public and the utility, all of which, in the end, had to be paid by the tax payers and the patrons of the utility.

From an economic standpoint, an unlimited franchise, with the provision that the municipality may revoke it at any time upon condition that it acquire the plant by paying to the company the reasonable value thereof, is generally regarded by those who have given the subject exhaustive study and consideration as the best kind of franchise. The necessity of the service in all probability will not terminate with, or prior to, the time of the

expiration of the limited franchise. As far as it is possible to peer into the future, public utilities now operating or others of like character will be required to render services to the public after the termination of existing franchises.

It must be obvious to all who have given the subject any serious consideration that an indeterminate franchise containing the provision that the rates and services shall at all times be subject to revision by an impartial and independent tribunal will result in the greatest good to the public as well as to the investors in such enterprises. It will eliminate all friction between the community served and the agency serving it. Naturally such a policy would be opposed by the average municipal politician who rides into office either as a champion or an opponent of the public utility, which is usually a factor in municipal politics.

What the Wisconsin Law is.

It was with a view of placing public utilities upon a sound economic basis and eliminating all unnecessary friction between the public and such concerns due to causes arising from ignorance of the economic status of public utilities, and their moral and legal relations to the public, that the Wisconsin public utilities law was framed and enacted. The economic features of this law which are fundamental in its structure are the result of exhaustive study, investigation and consideration given to the subject. The law was not the work of a day, but the result of years of study and investigation, and the fact that it has remained upon the statute books for five years without a single material change in any essential provision is an evidence of its wisdom and efficiency.

From the administrative standpoint, the vital provisions of the law are those relating to valuation, accounting, service and rates. The law imposes upon the commission the duty of valuing every public utility plant in the state. It is essential that the capitalization upon which returns are to be allowed be determined in order to deal justly with the matter of rates. The law does not attempt to establish any inflexible rule for determining valuation. In view of the conflicting theories of ascertaining the capitalization of a public service corporation for rate-making purposes and in the absence of any controlling judicial authority indicating the correct measure of the various elements of value that enter into the computation, the law is expressed in comprehensive terms and leaves to the commission the task of determining the probative effect of the value of such elements when ascertained upon the hypothesis of any of the theories advanced.

It merely provides that the commission shall value all the property of a utility "actually used and useful for the convenience of the public" and separately state the value of the physical property of such utility. In a somewhat recent case the commission had occasion to review the decisions of the courts bearing upon the question of the proper capitalization in a rate case, and expressed its attitude upon the subject in the following language:

"It must be stated that only so far as the reasoning of such authorities has appeared to us as consonant with sound economic principles and applicable to the situation disclosed by the investigation, has it been accepted. No slavish following of precedent or theory, regardless of effects, has been attempted. The controlling motive in our deliberations has been to attain a result which would be practicable of application and absolutely just and equitable to all concerned."

Every element of value, both tangible and intangible, is to be considered in reaching a result, excepting only franchise values, which are necessarily excluded by the general policy of the law. The object to be attained is the fair value of the property as a going concern. This in the contemplation of the statute, is the proper capitalization upon which returns must be allowed.

In this discussion it will not be possible to give more than a brief consideration to the method employed in making such valuation, which perhaps differs in some essential respects from that heretofore generally in vogue. The elements usually available for consideration are the original cost of construction, the amount expended in permanent improvements and extensions, the reproduction cost and the same less depreciation, and the going value. In arriving at a fair and equitable appraisment of the physical structure, the commission has considered, as more or less controlling, the reproductive cost based on the average prices of material and labor for the five years immediately preceding the time of appraisement. Such basis eliminates the effect of sudden and marked fluctuations in market prices, often due to temporary causes, and experience has shown this to be the best means of arriving at fair averages.

The results thus attained have been so obviously just and equitable that the municipalities and the utilities generally have acquiesced therein. Nevertheless, for the sake of comparison and illumination of the subject, the reproductive cost based on current prices also is considered. The commission has never confined itself to any one basis to the exclusion of others in reaching a conclusion. Every factor bearing upon the subject is carefully weighed and such importance given to it as the situation in the light of all the circumstances demands. While a form of universal application might be desirable, yet, from the very nature of the undertaking, such is impossible. In the last analysis, enlightened judgment and conscience must be applied to the facts in hand if a just determination is to result.

The valuations thus far made have been undertaken for the most part in connection with rate cases, although, as above indicated, the law contemplates the ultimate valuation of every public utility in the state.

As one of the distinctive features of the law is that all municipal plants are placed under the supervisory powers of the commission to the same extent as privately owned plants, it becomes necessary for the commission to value municipal plants as well as private plants. It has already valued the municipal plant in the city of Madison, and is now engaged in valuing the municipal water plant in the city of Milwaukee. These two cases are probably the first investigations of the kind ever undertaken under similar circumstances.

Establishing a Uniform Accounting System.

An important feature of the work in administering the law was the establishment of uniform classifications of accounts. It will be recognized that before standards of efficiency and economy in management can be established, it is necessary to have comparative statistics, illustrating what has been and can be accomplished by the various utility plants. For this purpose a common schedule of reporting financial, operating and statistical information was devised and a uniform classification of accounts prescribed to insure identity of treatment in reporting the separate items of the balance sheet and income account. These classifications have now been in effect for over three years. In addition to the utilities operating under them in Wisconsin numerous companies in other states as well as in other countries have voluntarily adopted the prescribed accounts with little modification.

One of the features of these accounts, in which the classification differs from similar prescribed classifications in other parts of the country, and concerning which it was submitted at first to much criticism, is that it endeavors to

serve as a basis for ascertaining the cost of service. Although it is self-evident that no business of the character involved in public utility service can be successfully conducted without an accurate knowledge of the cost of rendering the service in which the utility is engaged, it was surprising to learn that while the best conducted privately owned utilities had in a measure recognized the importance of such information and had somewhat imperfectly attempted to ascertain the same, the majority of the managers of municipal plants had generally been wholly oblivious to the necessity of any such knowledge.

This lack of efficiency on the part of the managements of municipal plants has been due partly to various causes, many of them beyond the control of the municipal utility plant. The first of these is the question of organization and responsibility. A part of the public utility function or department of city government is frequently administered by a superintendent, board of public works, engineer, board of commissioners, or committee of the common council, and it is frequently difficult to ascertain just where the duties of these individual city officials begin and end.

Again, the matter of rotation in office seriously interferes with continued efficient management. Executive rather than merely administrative ability is necessary in order to successfully conduct a utility plant, and it is to be regretted that the occasional good executive must be made the sacrifice to party policy.

At the present time, however, practically every utility within the state, whether municipally or privately owned, is now keeping its accounts according to the system prescribed by the commission.

Some Advantages of Supervision.

As the various plants are classified according to size, comparison in results of operation being plants in the same class has proven of inestimable value to the managements of all plants, either publicly or privately owned. By studying the accounts of the various plants, the commission is enabled to become familiar with the details of operation of each plant and to point out to the management economies that may be adopted and improvements that may be made in the conduct of the business.

Balance sheets and accompanying reports of various utilities are becoming matters of increasing interest and investigation on the part of the public, and as they reflect the experience and result of operation of each plant self-interest as well as public sentiment, which is being engendered by comparative study of such statistics, is inducing alertness in the management of such enterprises, whether municipal or private, to observe and adopt economies in operation, extend the business, improve the service, and lower the cost to the patrons.

In the matter of the regulation of service, the work of the commission has been most effective. Standards of service have been established to which every utility is required to conform strictly. To detect violations of the rules relating to service, the inspectors of the commission are constantly traveling through the state making secret inspections. These rules differ materially from those in vogue in other states and countries. They place the responsibility for the character and the quality of the service primarily upon the utility, which is required to test its own meters and make various other specific tests of the quality of the service prescribed in the rules and regulations, and also to keep a record of the results of all such tests, which must be kept open for public inspection.

When the general survey of the service in the state was first made, it was found that few of the plants were able to comply with the prescribed standards without making alterations and improvements. Hundreds of thousands of dollars were spent by the different utilities in order to bring their equipment to the point where compliance with the rules of service was possible.

Wiping Out Discrimination.

At the time that administration of the law was first undertaken, it was found that there were few public utilities in the state which did not have in effect a large number of discriminatory rates. While all had established schedules of rates, the departures from such schedules were numerous. Free and reduced rates were given to favored persons. Many thousands of such discriminations were in existence.

While the practice of discriminating between patrons in the matter of rates and service had become general, as is usually the case where there is no independent tribunal provided by law charged with the special duty of enforcing the obligations of public utilities to the public, it was difficult for the utilities, in many instances to wipe out the discriminations of their own accord. These had often been forced upon the utility by those having more or less influence in the community, and who were in a position to harass the utility through the common council and otherwise unless they were favored as patrons.

Such influences were not entirely unlike those which, a few years ago, often compelled railway companies to indulge in similar practices. By a general order, the commission compelled every utility in the state to eliminate discriminations of all kinds and charge the regular schedule rates.

As rates made by the commission are based upon the cost of service, the commission has, in each instance where a schedule of rates has been challenged, worked out a scientific schedule which classified the services according to the cost thereof. The result of this has been most gratifying. Business has extended and the returns to the public utility increased.

It is the purpose of the commission, in order to facilitate work along lines of establishing scientific schedules of rates, to publish the rates, rules and regulations of all the utilities in the state, and by comparison and by the use of hypothetical plans, demonstrate what are reasonable rates, rules and regulations. In a number of cases, small utilities have asked the commission to revise their entire schedule of rates. In fact, utilities often come to the commission asking that a schedule of rates be provided which will develop their business.

During the last two years such requests have come not only from the utilities within our own state, but also from utilities in all parts of the country. Unfortunately, the task of the commission is too great to enable it to undertake work outside of its jurisdiction. Generally the managements of the utilties carefully study the decisions of the commission, and are often thereby able to adjust their schedules of rates upon the principles governing the commission in its actions.

Perhaps the larger number of utilities in the state are today operating upon schedules which are more or less scientific and based in a measure upon the cost of the various services rendered. It is gratifying to know that the utilities that have established such schedules of rates have been able to extend their business greatly, increase their operating revenues and their net incomes, and reduce the cost of the service to the consumers.

In this connection, brief consideration may be given to the rate of return allowed on the investment in a public utility enterprise in the state of Wisconsin. The inquiry is often made by those interested in utilities outside of the state of Wisconsin as to the rate of return that is

(*Continued on page* 446.)

The Telephone Inspector and the Troubleman

The Third Installment of a Series of Articles Which Deal in an Elementary Manner With Many of the Problems Encountered in the Operation of Small Exchanges—The Bracket Toll Line—Toll Line Transpositions

By A. E. Dobbs

"Would it not be better if that bracket toll line we went over yesterday were cross armed?" questioned Will of George next morning when both were taking a short rest.

"The line doesn't make us any trouble, does it?"

"No, we haven't had a line trouble on it since I've been here."

"Could a cross armed pole do any better?"

"But those brackets are not as strong as an arm, and you can't tell what might happen, and then they don't look as well," argued Will.

"It seems to me you are borrowing a great deal of trouble," responded George. "Would it not be just as well to wait until the line shows signs of falling down before we begin to rebuild it? Now in this case the line was built to the town of *A* when there was nothing there but a toll station. Then, they built up an exchange at *A*, and ran the toll line to the next town of *B*, which also built up an exchange. At first, it seemed that one line was all that would ever be needed, but when those towns were built up another line became necessary to handle the business, and last summer we built a third one as far as *A*.

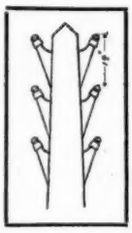


Fig. 5.

"Bracket lines can be made to look as well as those carrying cross arms, and they are almost as strong if put on with six-inch wire nails. They are cheaper than cross arms, and a great deal less trouble when among trees. Now my plan of building a bracket line is like this (Fig. 5). The brackets are placed opposite each other, which brings the wires from eleven to thirteen inches apart. The second line is fourteen inches below, and spaced the same way. Thus, these wires, even though they do look close together, are as well spaced as if placed on a cross arm. We have become so used to seeing brackets spaced two to three feet apart, and wires hanging with all degrees of slack, that a well-built bracket line looks odd to us.

"In the plan I have sketched, the wires must be pulled so that there is not more than five inches of sag between poles. A bracket line must be as firmly guyed and braced as a cross armed line. With such construction a bracket line will be as satisfactory as any other. Now, don't go away and tell people that I said a bracket line is as good as a cross armed line, for I would prefer to see the latter. I merely wanted to point out the way to make a good bracket line. Neither must it be forgotten that with this plan (Fig. 5), the lower wires will sag to within about eighteen feet of the ground, provided twenty-five-foot poles are used.

"One thing more. If we should determine to put cross arms on the poles, we will not use anything smaller than a six-pin arm. Let me tell you in strict confidence that a ten-pin arm costs but a trifle more, and we don't have to change it, should it so happen that we need more than three circuits. For country lines it is best to have the pins placed twelve inches apart, as there will be less trouble with them."

"I wish," said Will, "that you would explain toll line transpositions. I have noticed that you make the transpositions for different lines on different poles, but is there any good reason for it, and do you have any regular plan for doing it?"

"Do you remember the first toll line you worked on as a ground hand, where there were two transposed circuits?" asked George. "Do you remember seeing any marks on the poles as you went along?"

"Yes, some of them were marked with an *X*."

"Yes," said George, "and if you had looked carefully you would have discovered that there was an *X* on every tenth pole, and that each transposition on the same line came forty poles apart. Where the line passes alongside a trolley road and through two towns, I afterward transposed every tenth and in some places every fifth pole, to get rid of the trolley and electric light induction.

"Here is the plan of that line (Fig. 6). Being a bracket line, the wires were disposed somewhat differently than if placed on cross arms. For convenience, we will mark all those *X's* as *A, B, C, B, A,* which is a plan followed by many long distance companies. As I said before, there is in this case an *X*-mark on every tenth pole, and as there are forty poles to the mile, this makes a quarter of a mile between transposition poles. But we do not transpose every quarter of a mile. Look at this sketch (Fig. 6) and follow the top line, remembering that the letters *A, B, C, B, A,* are a quarter of a mile (ten poles) apart. It is easy to see that the transpositions on that top line, which occur only when the letter *A* is met with, are a mile apart.

"Then we built a second line, and in order to break up inductive effects, we did not transpose at the same places as on the other. We came back half way between those two transpositions at points *A*, and transposed our second line at points *C*. Thus our second line is crossed over at exactly the middle of the first line section. Now, when we ran the third line this last summer, which is shorter than the other two, we decided to make twice as many transpositions, or one every half mile, instead of every mile as heretofore. Our reason for this is that a short line is overbalanced by the static induction of longer lines, so that more transpositions are necessary. Hence, we transposed this one every time we came to a pole lettered *B*.

"Should we ever run a fourth circuit on brackets, I will probably arrange transpositions three-quarters of a mile apart, like this (Fig. 6), though there are several other arrangements just as good. We might transpose every quarter of a mile, but in an open country that would be unnecessary trouble. We

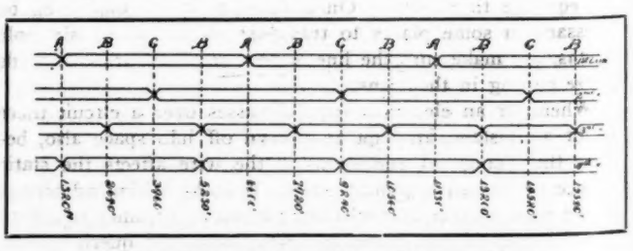


Fig. 6. Transposition Scheme for Four Lines.

could also transpose every half mile from the middle of the third circuit, taking the poles at *A* and *C*; or as there are two circuits interposed between it and the top circuit, we might transpose it on only the same poles at points *A*. One of these methods is as good as another. Our reason for transposing

in this manner is that we break up the inductive effects more thoroughly.

"Take lines Nos. 1 and 2, for example, supposing that both are in use at once. The current in line No. 1 sets up two different kinds of induction in line No. 2, neither of which

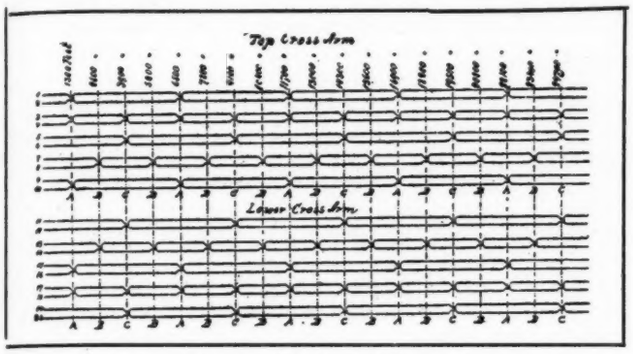


Fig. 7. Transposition for Two Ten-Pin Cross Arms.

exists independently of the other, although one kind may be greater. One is the electrostatic and the other is the electromagnetic induction. Now, by making a transposition in the middle of the section of line No. 2 we get the inductive effect on opposite sides of the circuits, so that these currents oppose and kill each other. That is the whole secret of transposition, to keep your inductive currents balanced. There is no hard and fast rule for making transpositions, and the man who makes a blue print of a line before it is built may have to modify it considerably before he gets through, unless he has made a careful inspection beforehand.

"If the line is noisy when built, try and locate the noisy section. You can tell by listening whether it comes from a trolley, telegraph, electric light line, or a ground. If in doubt as to its location, take a test set, get out on the line, open up both sides and listen first on one end, and then on the other. By following this up, you can soon run it down. If you think that more transpositions are necessary in certain places, take a receiver and listen on the line after every transposition is made, to judge of the effect. Keep cutting in transpositions until the line becomes quiet. Then stop and let well enough alone.

"Here's a sketch (Fig. 7) showing the plan generally followed in long distance work which is mapped out for two cross arms. Should there be a third arm, it would follow the same plan as the first, the wires of the second acting as a shield between the first and third. This is by no means the only method of transposition, but it is one of the simplest and easiest to follow. Besides, when there are several gangs at work on one line, they must have a plan, so that their work will agree. In very long lines it is possible to carry out a blue print plan of transposition much easier than in shorter ones, because local disturbances have more of a chance to distribute and equalize themselves. On a shorter line, it may even be necessary in some places to transpose every five or six pole lengths, but make sure the line is perfectly free from grounds before cutting in the transpositions.

"Whenever an electrical impulse passes over a circuit there is, for an instant, an impulse thrown off into space also, because the change of conditions in the wire affects the static balance of the surrounding ether. It is by taking advantage of this phenomenon that wireless telegraphy becomes possible."

"Whatever do you mean by static balance?" queried Will, who had become greatly interested.

"Let me think a moment," mused George. "Can you imagine being placed in a lonely spot where there is not a sound, not even of the wind, and no signs of life except a railroad track? In that case there would be a static balance in both the track and the atmosphere, because both are at rest. The word itself means stationary, or, rather, one force being balanced against all counter-forces. Now, let a section man strike one of the rails with a hammer or a train come rushing along and the balanced or quiet condition of the atmosphere is upset or disturbed. We may hear not only the sounds, but feel the jar or wind as well as the coarser vibrations of the train, although both sound and wind represent but a mere fraction of the force expended by either hammer or train.

"Let me see if I can think of another case. Take a motor boat on a small lake; the water itself may be perfectly still. The boat in moving through it pushes away the water in front. The water, thus pushed away, returns to the rear to replace the disturbed level; not only this, but if you will notice, there is also a trail of water dragging after the boat, while waves from the bow spread out in all directions. These waves, if they encounter another boat, will cause it to rock. But if another boat, going at the same speed and making waves of the same size, can match its waves with those of the first, they will meet and kill one another so that neither boat will be rocked for the spreading waves will be broken up.

"These are mechanical comparisons, but let us suppose that something of this kind takes place in a wire when the current is turned on; let us suppose that electricity is everywhere present but in a state of rest in the wire as well as elsewhere, and that when current is turned into a circuit, it must upset the static balance before it can progress. Can you not see that not only electricity on the wire but also in the surrounding space may be agitated?"

"This is all so strange to me that I can hardly understand it at all," said Will, "but how do you know all this; and, where do these waves go to when they leave the wire?"

"If there is no other conductor near them," replied George, "they are lost in space or return to their own conductor again. If there is another wire nearby, then they follow it back as far as possible towards the office, because it is an easier path than the air, but, if there happens to be a telephone attached to the conductor, they will appear as noise or cross talk in the receiver. Did you never hear the noise from trolley circuits or electric light wires in the telephone? That proves that electric waves pass through space, does it not? And how about the wireless telegraph messages on the Atlantic Ocean?

"If a circuit is perfectly balanced as to conductivity and leakage, one side will be positive and the other negative. When a positive and negative wave meet, they will neutralize each other, but if not they will tend to assimilate to each other, or rather, jog along together. Where there is only a single line and no other electric wires around, there is no need of transposition for this effect does not take place as there is no other conductor. Where there are other circuits which might be affected or which might affect the telephone circuit itself, then it is necessary to transpose.

"The original transpositions consisted of twisted pairs the same as you see in all of these duplex house or cable pairs, but in open wire work this is not necessary. We give the wires a complete turnover every second transposition instead of every three inches as in the duplex wire.

"The longer the lines, the greater the static effect becomes, so the wires must be turned over at frequent intervals of a mile or so at the most. Also, as the middle of a transposition section is the spot where there is a balance struck both ways, it follows that this is the spot where the transposition on the opposite circuit should be cut in."

"One thing," broke in Will, "I should like to know and that is: Why do they number their poles *A, B, C, B, A,* or 1, 2, 3, 2, 1, instead of *A, B, C, D,* or 1, 2, 3, 4?"

"I really don't know," replied George, "but I suppose the object was to enable the inspectors to start from either end and count straight ahead, for our present scheme counts backward as well as forward, and most transposition plans so far produced have been made up in the same way."

(To be continued.)

Efficiency.

Business efficiency and business success are controvertible terms. A characteristic of Americans, it is stated with pride, is their natural proclivity to adaptation. The average American can turn his hand to anything and almost with equal success in any business or enterprise which he undertakes. It is quite true that the average American has a genius for adapting himself to circumstances. We find him today behind the counter and tomorrow driving a wagon. After failing in a dry goods store, we discover him a few months later opening an ice-cream parlor across the way. He seems to be as content in one position as the other. If ill luck still pursues him, we may find him later on studying for the ministry or "following a course" at some medical college. His versatility is only equalled by his faith in himself.

The correspondence schools have educated a large section of the American youth into an abiding belief and confidence in their own intellectual fitness for any profession or any calling under heaven. This optimism has become, so to speak, a national characteristic, and in so far as it is not carried to extremes it is a valuable commercial and industrial asset. But adaptability is not efficiency. Efficiency in any calling is not intuitive. As a rule, it is a personal acquisition that has only been achieved through wide experience and the practical application of that experience to definite ends.

Efficiency is not an intellectual endowment. Certain intellectual attributes favor efficiency or make, with the indispensable experience, an efficient man or woman. It is a matter of course that the salesman, or saleswoman who is bright, a conversationalist, who has certain educational advantages, ordinary or specially acquired, will prove more efficient in any department of a store than a person who lacks these qualifications. But these of themselves do not constitute efficiency, although they are indispensable in acquiring the technical aptitude that characterizes it.

A Few Attributes of Efficiency.

Efficiency is the capacity of doing the right thing at the right moment, with little or no premeditation. The most salient indication of efficiency, objective and subjective, is self-reliance. Self-reliance is not will in the sense of pugnacity, of obstinacy—plug-ugliness. Efficiency is self-reliance modified by circumstances. Self-reliance is the gift of experience and of practice. A self-reliant man is not a man who adheres to his own opinion in the face of the unfortunate experience of others and even of himself in the past. The self-reliant man says to himself; this course is right, will lead to success, because to my knowledge and that of others it has invariably done so. If my action in this instance results in failure, it will be due to extraneous causes, not that the principle that dictates my action in this instance is wrong.

Self-reliance, educated and practicable, is a compass. It may happen owing to magnetic disturbances, that the needle deviates, that it does not point true north, and that consequently a shipwreck may result from dependence upon it implicitly in this instance or that, but without self-reliance, without this compass, progress toward a definite end is impossible either on land or sea.

Efficiency, then, is mainly self-reliance regulated by principles that have acquired the consistency of rules. Efficiency above all, is not what is popularly known as "hustling." Regulated activity is not "hustling." A very few years ago "hustling" became so popular as to connote almost a form of "dementia." Every advertisement that one glanced at in the "situations vacant" columns of our newspapers wound up with the legend, "None but hustlers need apply." The "hustler" was supposed to be a sort of universal genius who could do anything, who could undertake anything, who could imitate anything, who could make a success of anything.

In ninety-nine instances out of a hundred, the professional "hustler" was an incompetent, loquacious ass, who through his impudence and pertinacity, kept men out of jobs for which they were fitted, and which he himself was incapable of filling, either theoretically or practically. Today the majority of business men who are themselves efficient have come to appraise efficiency at its true value.

It may appear paradoxical to say so, but in the rare instance where a business is managed efficiently and immediate financial success is not the result, there can be no failure. The example set by an efficient business man who does not succeed owing to circumstances over which he has no control is of inestimable value to the community.

The havoc that such events cause among the most efficient business men in incalculable, and they are occurring every day. But in instances of this sort where efficiency is no preservative of business success or stability, the community does not suffer on the whole, for the efficient business man finds an opening elsewhere and the same cause that led to his success in one place is bound to achieve it in another.—Brains.

Useless Records.

With every growing business there arises a positive need for a certain amount of clerical work. As it continues to grow and is divided into divisions and departments, the need becomes still more urgent for such work of the most explicit as well as comprehensive nature.

Frequently with changes of methods it happens that the need for certain reports or parts of reports becomes less noticeable. Then, for fear that the information may be needed there is sometimes a hesitancy in discontinuing their preparation entirely or in changing them so that the needed parts may be combined with related tabulations on other forms.

A few years ago a report requiring about an hour's careful work each day was begun in one of our departments. References were frequently made to it by the clerk, but for some unaccountable reason the man who directed it did not find an opportunity to go over it in detail until several months had elapsed. It was not one of the regular records made from month to month for comparison. When the need for that information did arise, several months after the work had begun, both the boss and the clerk were surprised, and that, through a misunderstanding, the total of over 250 hours of work was entirely worthless.

It is not necessary for us to search for such surprising instances among the reports with which we are familiar, but perhaps a thorough and unbiased examination of the reports and, in fact, of all clerical work in our daily duties, may aid in minimizing an appreciable proportion of "figures and words" for which the company has to pay.

The examination of this class of production devolves not only on the supervisors but on those who actually do the tabulating and compiling. They are in a position to determine the accuracy and worth of some of the information and should be ready at all times to make suggestions which may minimize any part of it. On the other hand, their superiors should be sufficiently broad-minded to accept such suggestions as they are intended without necessarily adopting them to the detriment of the work.

Many a report contains a row of vertical or horizontal figures of value that keeps the whole report on the "live list" when only that particular row of figures is entitled to such an honor.

We are not advocating the wholesale discontinuance of reports. Such a view is far from our minds. But we do believe that there are parts of records and, in some instances, entire reports that careful consideration would eliminate. What we don't do in the report line is sometimes as helpful as what we actually do.

Let's weigh the value of every report that we originate or supervise, with the relative cost of its preparation and incident expense.—The Telephone News.

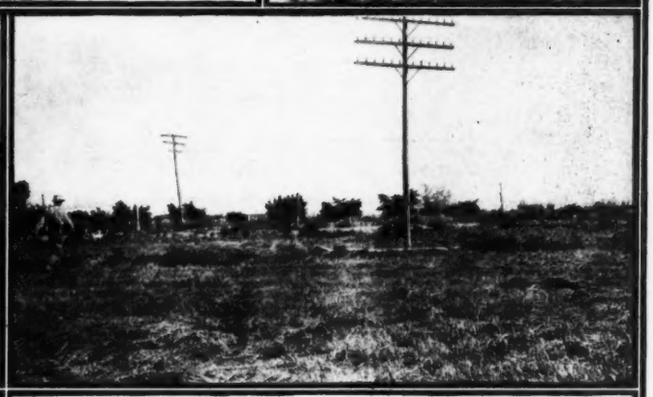
Difficulties of Maintaining Pole Lines Along the Rio Grande

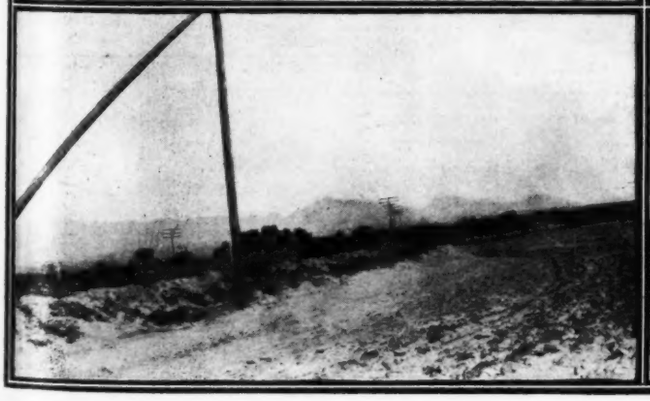
Down in New Mexico, the Rio Grande is flowing peaceably on its way to the Gulf of Mexico. but it is not always so, especially in the spring time. Last spring, the latter part of May to be exact, the water was high in the river and in many places overflowed the banks. But this was not all the river did during the season of high water, it washed away all the bridges between El Paso, Texas, and Rincon, N. Mex., a distance of 80 miles, with the exception of one at Canutillo, and then changed its channel in several places. At Anthony, N. M., the Rio Grande is nearly a mile farther west than it was before the high water.

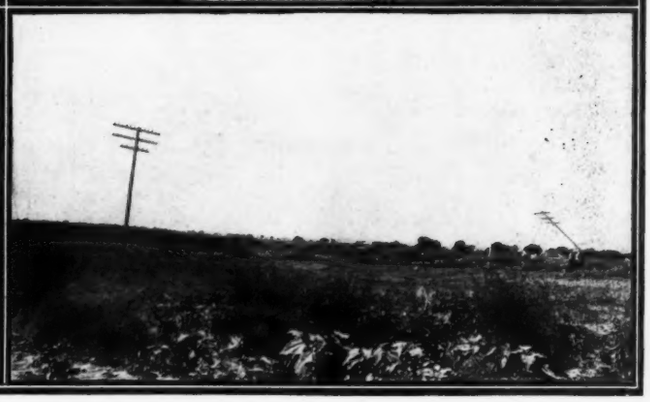
The washing away of the river banks and the changing of the channel was of great interest to the Valley Telephone Co., of Anthony, as may be judged by reference to the views shown in the illustration. The pictures were taken by D. E. Jeffery, manager of the company, and show the conditions of some of the telephone lines at the time of the flood. The upper view on the left shows a temporary installation of a telephone, which was placed for use of the men at the river during the period of the highest water. In the view below some of the water is seen with the telephone lines in the background. The dotted line indicates the position of the line before the flood. The two pole lines carry the temporary leads to which the wires were transferred. This line was moved four times in two days by a gang which worked night and day. The lower scene shows a temporary corner pole on this line.

The upper view to the right shows the men at work setting the temporary line. The remaining views show the conditions of the lines along the river.

At the point where these pictures were taken, about ten acres of alfalfa land were washed away by the caving in of the river banks. An alfalfa field is shown on the farther side of the pole line in the lower right corner of the illustration. Over 2,000 men and 50 teams were employed to haul brush and trees to the river banks to stop the ravages of the flood.







Mexicans Are Not the Only Source of Trouble Along the Rio Grande—High Water is a Foe of Telephone Companies.

Sparks from the Troubleman's Department

The Neighbors' Telephone.

Oh, a wonderful thing is a 'phone in the house,
That is hung in the wide dining hall;
It keeps you in touch with your neighbors, you know,
For they drop in to pay you a call.
At six in the morning you're roused from your sleep
In response to the door-bell's harsh tone;
You shiver and freeze in your nightie, the while
A neighbor makes use of your 'phone.

You sit down to breakfast and start in to eat,
When a neighbor comes in with a smile,
"Don't mind me, I just want to 'phone," she declares,
"I'll be through in a very short while."
At dinner and supper, between meals as well,
It's seldom you're left all alone;
For there's always a friend dropping in for a chat—
With someone else over your 'phone.

At night when you're settled at ease with a book,
And in slippers are resting your feet,
Comes a ring at the 'phone, and a sweet voice requests
You to call someone over the street.
Though the night may be stormy and chilling and bleak—
Very frequently such nights are known—
In your slippers you hurry to summon a friend
To come and make use of your 'phone.

Oh, a wonderful thing is a 'phone in your house,
Night and day you're in touch with your friends;
And you'd not be without, for on it you find
The comfort of living depends.
For the people who never before came to call,
A most friendly spirit have shown,
And they actually smile when they come to your house
To ask for the use of your 'phone.

—Detroit Free Press.

"Do you think telephone operation can be classed as a 'profession?"

"Well, it certainly is a calling."

The lineman is a man who to a lofty place aspires—
A place where he can sit above the herd and pull the wires.

—Dallas Morning News.

It is easy enough to be pleasant,
When life goes along like a song,
But the man worth while
Is the one who can smile
When he has to wait so long for a response from central that he forgets the number he wants.

A Modern Goddess.

Mystic lady, shy and wary,
With her long electric hair and flashing eyes—
She is neither witch nor fairy,
Yet she brings me gifts of wonder and surprise.

Silent, sleepless, she is sitting,
With her many maidens, quick to do her will·
And her throbbing thoughts are flitting,
Through the city, o'er the field, and on the hill.

There's a mystery never brightening
'Round my lady with the long and shining hair;
For her father was the lightning,
And her mother was a princess of the air.

Mystic lady, shy and wary,
All our wishes we can tell to her alone;
She is neither witch nor fairy,
Can you guess her? She's my lady telephone!

—Herbert N. Casson in Munsey'sMagazine.

The Trouble-Shooter's Psalm of Life.

Tell me not in mournful numbers,
"Trouble-shooting is a dream"
For the troubleman who slumbers,
Finds he must put on more steam.

If we do not work in earnest,
We shall never reach the goal;
For the trouble that returneth
Sometimes gets us in a hole.

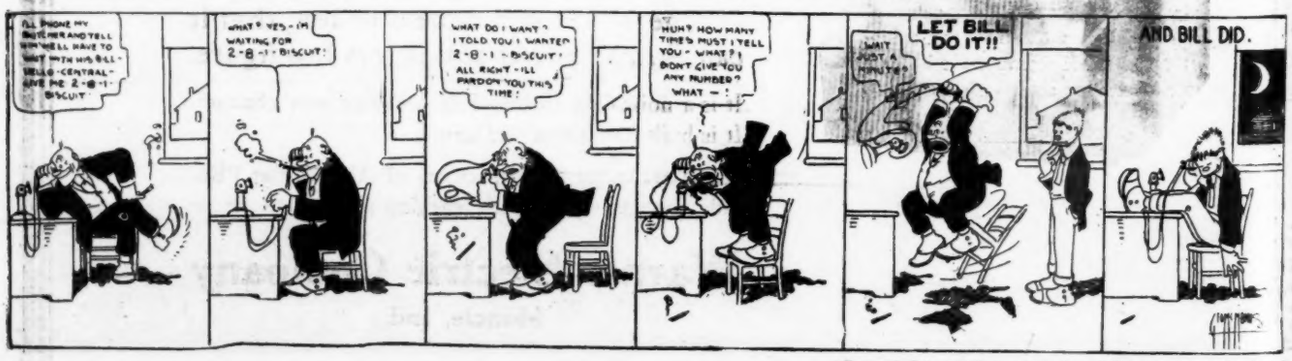
Trouble we should never borrow,
But what trouble comes our way,
Should be "shot," so that tomorrow
Find no trouble from today.

Trust no future, howe'er pleasant,
Keep on working hard instead;
Act—act in the living present,
'Phones within and wires o'erhead.

Lives of managers oft remind us
We can onward, upward climb,
And, departing leave behind us
Spur-marks on the poles of time.

Let us then be up and doing;
Let us strike a lively gait;
And, the festive "cross" pursuing,
Learn to labor and to wait,

—Leonard Young in Pacific Telephone Monthly.


ALL PHONE MY BROTHER AND TELL HIM WE'LL HAVE TO WAIT WITH MR. BELL - HELLO - CENTRAL - GIVE ME 2-8-1-BISCUIT
WHAT? YES - I'M WAITING FOR 2-8-1-BISCUIT!
WHAT DO I WANT? I TOLD YOU I WANTED 2-8-1-BISCUIT! ALL RIGHT - I'LL PARDON YOU THIS TIME!
HUH? HOW MANY TIMES MUST I TELL YOU - WHAT? I DON'T GIVE YOU ANY NUMBER? WHAT —!
WAIT JUST A MINUTE!
LET BILL DO IT!!
AND BILL DID.

(Copyright, 1912, by National News Association.)

LET BILL DO IT.

A Chain is only as Strong as its Weakest Link

SO

Galvanized iron would be fine EXCEPT THAT IT RUSTS

AND

Copper wire would be good EXCEPT THAT IT BREAKS.

COPPER CLAD WIRE DON'T RUST AND DON'T BREAK.

Its use increases efficiency and decreases your expenditures for line equipment.

For local distribution, drops, ground wire, ground rods, cable hangers, messenger strand and tie wires, you will ultimately use

COPPER CLAD STEEL

Manufactured exclusively by

Trade Mark "Weld Clad"

DUPLEX METALS COMPANY

CHESTER, PENNSYLVANIA

CHICAGO OFFICE
853 Peoples Gas Building

NEW YORK OFFICE
30 Church Street

PBX ringing for less than 50c per month

And it is ringing current that gives every station a clear, strong signal. The Warner PBX pole changer is the only pole changer that is so well suited to the requirements of the private branch exchange of 150 subscribers or less, that it can furnish power at this very low figure.

It is a noise-less trouble-less compact pole changer. It is built handsome and strong.

Better write for full particulars of the Warner PBX pole changer—it's worth learning about.

Warner Electric Company

Muncie, Ind.

TELEPHONE AND HIGH TENSION LINES.

(*Continued from page 417.*)

ference as will prevent the practical operation of the telephone system.'

The remainder of the opinion deals with the question of whether the respondent has so interfered with the rights of the complainant, considering alone the transmission line, that an injunction should be issued. Again the court stated that the respondent's duty was to use every reasonable safeguard to prevent accidents. Moreover, the court regarded the evidence as showing beyond dispute that with any of the construction described in the evidence accidents occur from such high-tension lines. Telephone, telegraph, electric light and power lines are not immune to decay or destruction caused by the elements.

The evidence preponderated also on the proposition, in the court's judgment, that high-tension lines crossing over, under, or paralleling low-tension lines introduce an element of danger which otherwise does not exist, demanding extra precautions in the way of shorter spans, extra cross-arms and the use of screens or cradles. The judge recognized that cradles impose an extra burden on the line and tend to cause other trouble, but regarded them as necessary and pointed out that they are in use even by the respondent.

The opinion then concludes as follows. 'Therefore, I find from the evidence that the construction of the transmission line of respondent upon Chicago street between Broadway and Clinton street in the city of Lincoln is not the best, most approved and modern construction. While practicable, it was not necessary to the successful operation of the railroad to be so located, but located by election of respondent under lawful authority and is a right belonging to respondent which the court will not set aside or order removed provided the respondent recognizes the rights belonging to complainant, to be by respondent protected, provided and equipped with the safeguard to minimize the dangerous and hazardous conditions that now exist. Injunction will be granted as prayed for in the bill, except as modified by these conclusions.'"

The other decision bearing on this question was given by the district court in Mills county, Iowa. The plaintiffs in this case were the Mills County Telephone Co. and the Iowa Telephone Co. They were held by the court to be lawful prior occupants of the highways in the city of Glenwood, in the towns of Mineola and Silver City and of Mills county intervening between these places, and also entitled to use their telephone lines in these highways free from interference by the high-tension lines of the defendants, the Central Station Engineering Co. and Joseph A. and Anton J. Bortenlanger. These defendants had recently constructed high-tension lines in the highways in question, which interfered with and endangered the telephone lines of the plaintiffs.

Verdict was rendered in favor of the telephone companies and the defendants were ordered to make certain changes in their lines within thirty days. The decision shows that the high-tension lines were built above and parallel to the lines of the plaintiffs at three different locations, for a total distance of one and one-third miles. It was ordered that the defendants remove the telephone pole lines of the plaintiffs to the opposite side of the road, at their own cost and under the supervision of an agent for the plaintiffs, without interfering with the service.

The following instructions were given for the reconstruction of the defendants' lines, which must provide for and maintain:

"A vertical clearance over plaintiffs' lines of not less than eight feet. But where practical in the judgment of plaintiffs' division engineer, plaintiffs will consent to defendants doing the work of lowering plaintiffs' wires to aid in obtaining said clearance. But in no case shall plaintiffs' wires be placed lower than eighteen feet above crown of adjacent highway.

All high-tension crossings to be above telephone lines at all points.

Poles supporting the crossing span and the adjoining span on each side of said crossing span shall, where practical, be in a straight alignment.

Poles supporting crossing spans shall be side-guyed in both directions at right angles with high-tension line wherever practicable and be head-guyed away from the crossing span.

All anchors shall be iron at least one-half inch in diameter; all guy wires to be of 5/16-inch stranded steel wire.

All poles supporting crossing spans shall be double-armed—arms to be provided with metal plate and ground wire sufficient to carry the short-circuit capacity of the high-tension current carried on said lines.

The wire in crossing spans shall be stranded equal in size to a No. 4 B. & S. gauge wire. Or 5/16-inch stranded wire may be used at defendants' option, and said wires shall be dead-ended on insulators on the cross-arms supporting crossing spans.

All poles supporting crossing spans shall be sound and of sufficient size and strength to sustain one-half inch of sleet per wire with wind blowing fifty miles per hour. The parties to this proceeding shall inspect all crossing poles, and any rejected as insufficient by two engineers of plaintiffs shall be replaced by defendants within sixty days by sound poles not less than seven inches in diameter at top and thirty-six inches in circumference at a point six feet from butt of pole.

All new pins in crossing spans shall be of selected locust.

All of the changes herein specified to be made by defendants at their own expense and in a first-class, workmanlike manner, defendants furnishing all labor and material at their own expense."

The telephone companies also received judgment against the defendants for the costs of the action.

The New Zealand Telegraphs and Telephones.

The annual report of the department of Telegraphs and Telephones of New Zealand for 1911, states that the chief electrician, T. Buckley, has returned from a visit to America and Europe, during which he investigated the most modern telephone systems, and he will report to parliament on the matter. Considerable expenditure on modernizing the telephone exchanges will be necessary in the next few years. The year's revenue of the telephone exchanges was £179,124 and the revenue for paid telegrams, £288,432 (compared with £265,624 in previous year); total revenue for telegraphs and telephones was £479,280 (£438,940), Telegrams forwarded were 9,063,133 (increase 702,486). On March 31 last there were 11,805 miles of telegraph lines and 39,370 miles of wire.

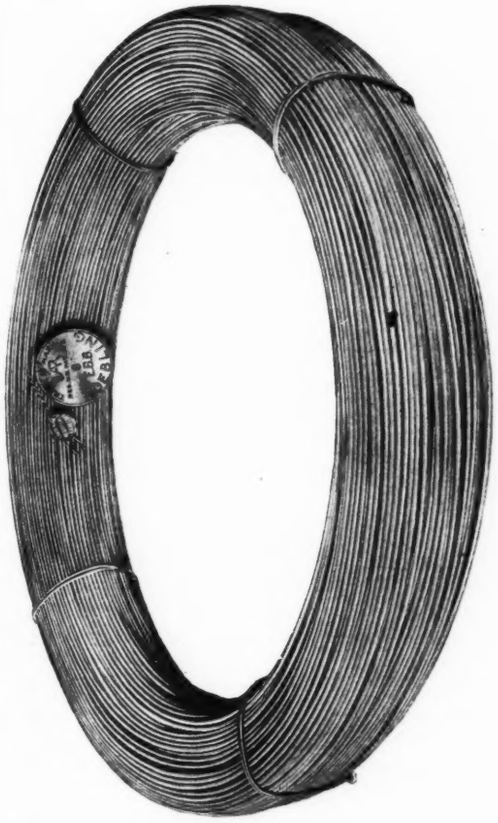
Thirteen new telephone exchanges were opened during the year, making 60 central and 133 sub-exchanges. The total number of connections is 37,257 (compared with 33,228 in 1910), including paying, 27,746; bureaus, 3,341; service, 388; extensions, 5,782.

On March 31, 1912, there were 1,538 miles of telephone lines and 37,872 miles of wire. By order in council of June 12, 1911, the telephone exchange regulations were amended to provide that an exchange with 151 subscribers or over may be kept open continuously if two-thirds of the subscribers express in writing their desire that the exchange should be so open continuously, and their willingness to pay a minimum rate of £6 per annum in lieu of £5. This decision can be reversed if at least two-thirds of the subscribers express a desire to return to the original hours—8 a. m. to midnight.

French Heels Come High.

A Denver, Colo., dispatch says that because telephone operators insist upon wearing shoes with French heels the Mountain States Telephone & Telegraph Co. must spend $7,000 in the construction of the new fire escape at the headquarters building.

The building is equipped with first-class fire escapes, but in a recent practice drill it was found that many of the girls wore shoes with small heels, and that the heels caught in the holes in the iron platforms and steps.



EVERY PROCESS

of the manufacture of **Roebling Double Galvanized Telephone Wire** is conducted with one end in view —to produce durable, uniform wire of high conductivity.

The metals used are carefully selected, subjected to exacting tests to prove their quality, and **protected** against rust by real galvanizing.

John A. Roebling's Sons Co.

TRENTON, N. J.

We make also Hard Drawn Copper and Copper Clad Steel Wire, Wire Strand and Telephone Cables.

Business Essays
Connected in Multiple-Series
Number One

ECONOMY

That word covers all you expect, pay for and should get in buying dry cells.

An economical dry cell: One that has long life and efficiency (claimed of every battery).

Price has little to do with economy—a good dry cell is worth all its cost, no matter what it costs, and frequently there is wisdom in paying a little more for economy's sake.

The only assurance of economy is a guarantee made by a responsible house and lived up to, both in spirit and letter.

Guarantee

We will *credit* account, *replace* batteries or *refund* amount paid for batteries including transportation charges if they do not prove satisfactory.

Manhattan Electrical Supply Co.

New York Chicago St. Louis

Please tell the Advertiser you saw his Announcement in TELEPHONY.

TELEPHONE TRAFFIC WORK IN NEW YORK.

(*Continued from page 427.*)

possibly the timing, of a ticket covering the connection. This all, of course, reduces the number of calls which an operator can handle.

Some may be wondering why an operator can handle so many calls to subscribers at long distance points. It must be borne in mind that this table shows only the work of the operator who answers. On a long distance call she simply passes the number to a toll board and the bulk of the work involved in competing the connection is done by the toll operator.

It is figured that this efficiency, equal to 245 local calls from a flat rate individual line, can be reached when an operator is one of a team of five or more, seated at adjacent positions at a switchboard, with the ability to handle not only the calls from lines directly in front of her, but to help out and receive help from those operators seated on either side.

In the slack hours of the day and evening, when there are not enough calls at each position to keep an operator busily engaged, the number of positions operated is, of course, reduced.

This is shown by the following illustration. As it is not possible to move the lines and place them all before each operator, we then have a condition where, in order to answer all calls which are to be handled, an operator must do considerable reaching to the right and left, and the ability to help out other operators and be helped by them, to do "team work," in other words, is reduced. It is found that under these conditions the number of calls which an operator can handle is reduced.

The reductions which must be made have been scientifically determined, and are shown by a curve. You will note that whereas an operator can handle 245 calls when she is answering calls coming from a single position, she can handle only 163 calls when she is answering the calls coming in from three positions. In the very slack periods when the traffic falls away off, and she may be required to answer calls coming in over a stretch of nine positions, her capacity is reduced to 72 calls in the hour. So in determining the number of operators which are required to run a given central office, it is necessary to know, not only the total number of lines, but the number of lines of the various classes of service; to know not only how many calls each of these classes of lines will make and receive, but where these calls will be to and from, and to know the number of these calls which will be made in each hour and fractional part of each hour of the day and night.

These facts must be determined several months in advance in order that due time may be had in which to secure and train the operators required, and incidentally to recommend the switchboard needed. This careful forecasting of needs is a part of the "central office organization work," and is one of the principal duties of the division traffic engineers, who, co-ordinating with central office and school managers, must see that there is a proper number of trained employes available at all times to handle efficiently and economically the calls and other traffic work in each central office. The proper carrying on of this work is of increasing importance as the business grows.

Inefficient "organization work" results in one of two things, either the wasting of money from carrying employes on the roll who are not needed, or unsatisfactory service because a sufficient number are not provided. Experience has shown that when the service deteriorates to any considerable extent, it takes a long time to bring it back to the standard, and the results are serious and far reaching.

By reference to the curves representing the hourly traffic received in two typical Manhattan offices—Franklin and Morningside, it will be noted that the number of calls in the busy hour of the morning is substantially the same, but the number of calls in the various other hours of the day differs widely. One hundred and three operators run the Franklin office, whereas the number required to run Morningside is 159.

Approximately the same number of calls each day are handled in Worth and Melrose. Adding up these hourly figures, it is seen that each office handles about 42,000 calls. To run Worth, requires 100 employes, and to run Melrose, 133. This difference is brought about in large part by the fact that in Worth over 95 per cent. of the traffic is received between 8 a. m. and 6 p. m., so that the operators are handling almost the maximum number of calls during the entire time they are on duty, whereas in Melrose, the calls are so distributed throughout the day and evening that during many hours the operators are necessarily working at a lower efficiency.

Involved in this organization work, is the provision of operators to handle the growth in business; to fill resignations as they occur; to take care of the work of absentees; to supply the places of girls on vacation; and the securing and training of operators to handle the traffic in such offices as are found in Monmouth County, N. J., and the Rockaways and Coney Island, where for months there is practically no business, and then with the opening of the summer season there comes a tremendous rush of traffic.

Closely related to this work of determining the number of people needed is the question of taking care of them while in the company's employ. Everything possible is done to make the conditions surrounding their work pleasant and interesting. But perhaps more important than purely material things are those matters which relate to the peace of mind of the operator.

Every effort is made to secure absolute justice and fair treatment for all. In the selection of chief operators, supervisors and all employes who have charge at any time, the greatest attention is paid so that perfectly suitable women are chosen. Great care is taken to guard against "nagging," against that persistent and perpetual correction for trivial things which takes the heart out of any worker.

The time of handling telephone calls is measured in seconds, and so from the very necessity of the case, a rather strict discipline is maintained, but this discipline in its application falls upon all alike. This point is most important, as there is nothing so destructive to good feeling and the right attitude towards one's work as a belief that unfairness is being practiced and partiality shown.

This brings up another most interesting and vital problem, which is one which confronts the traffic departments of all large companies. This problem is the provision of adequate and understandable instructions for handling traffic under all the varying conditions obtaining throughout the length and breadth of the territory. There is the further problem of how best to get these instructions into the minds of those concerned in such a way that each and every employe will know precisely what to do under each and every condition—so that there shall be no hesitation, no confusion, and no false motion to interrupt the regular rhythm of the daily traffic.

Of the 11,100 employes of the traffic department, some are handling outgoing calls at local boards, requiring intimate knowledge of local conditions, local equipment and local switchboard markings; others are handling incoming calls, requiring special instructions and special training. Some are multiple marking operators, who are expected to intercept and straighten out calls which cannot be completed as given by calling parties.

Others are complaint desk operators dealing with subscribers who have been annoyed for one reason or another, and

MILLIONS Of Dry Cells Are Handled In This Territory

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Direct from Madison, Wis.

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Your orders will be shipped the day received.

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Most Satisfactory Service
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Approved by Leading Institutions of Technology and Telephonic Science. Handled by most representative Jobbers and Supply Houses.

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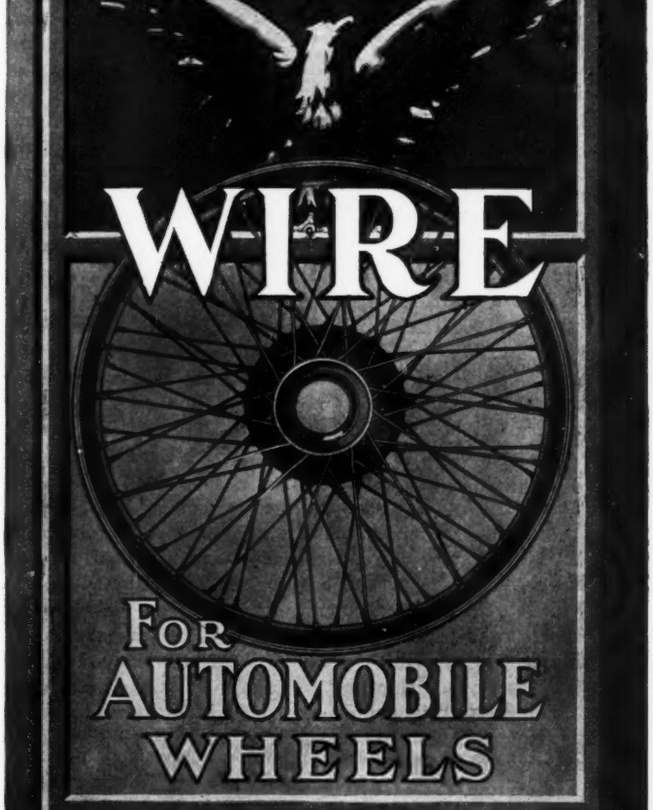


WIRE FOR AUTOMOBILE WHEELS

WIRE WHEELS mean nearly 70% more tire mileage over wooden wheels because the bare rims and wire spokes radiate the heat; and further, they softly float over obstructions while wooden wheels rigidly bounce. Wire wheels are much stronger by actual test, and are also considerably lighter, especially at the rim and this materially economizes engine power. Eighty per cent of recent Grand Prix racing cars were equipped with wire wheels; and this is about the percentage of wire wheels used on all pleasure cars in Europe. They are destined to become universal as their beauty, economy and engineering advantages make them the only correct wheel for automobile use. You should insist upon having them on your car. Write for our *American Wire Wheel News*, fully describing all makes and methods of manufacture, and how you can adapt them to your car.

Frank Baackes, V. P. and G. S. A.
72 West Adams Street Chicago

who must be made to feel that they are in the hands of people who can straighten out all their difficulties. Some are recorders at toll boards, who must accurately determine from calling subscribers just who and what it is they wish to get at some distant point. Others are connecting operators at toll boards, who must have an intimate knowledge of geography, and the trunk routes extending over a wide range of territory. Some are supervisors looking after a multitude of details, in the operation of their divisions. Others are clerks requiring special knowledge and special training concerning accounting, line order work, switchboard markings, and the handling of toll tickets.

Some are service observers, trained to detect the most minute variation from the operating rules. Others are public telephone attendants dealing with the transient public. Some are information operators dealing frequently with calling parties who have the most vague and indefinite idea as to what it is they really wish to get. Others are administrators, who require special instructions for carrying on the executive work of the department.

Of the 4,000,000 telephone calls handled each day, some are direct trunk calls requiring co-ordinated operation between two operators. Others are tandem calls requiring particularly close co-ordinated operation among as many as four operators.

Some are toll board calls for small towns and hamlets located anywhere within a radius of fifty miles, requiring various combinations of built-up and reversed connections. Others are calls handled over long distance lines to distant cities, requiring the utmost care and attention, to obtain connection with the particular parties desired, and requiring a special code of regulations, for the purpose of insuring co-ordinated operation with the employes of other companies along the route.

Some are calls for the transmission of telegrams and cablegrams, requiring a detailed knowledge of the plan of operation, and the plan of charging on such calls. Others are calls from coinbox stations, requiring special instructions to cover all forms of deception, dispute and misunderstanding. Some are emergency calls, passed by calling parties under circumstances requiring the utmost speed and decision in summoning help, and hence involving an exact knowledge of what to do when such cases arise.

On many or nearly all of these calls, there must be an exact understanding of the records to be written for revenue purposes, and the charges to be quoted when requests for charges are made. On all these classes of calls the most expeditious methods must be devised. Phrases must be employed which will give all concerned a correct understanding of what the operator is doing, in the fewest possible words. These instructions must be so arranged that employes doing combination work of various sorts will not be confused by following divergent practices under similar conditions on different classes of traffic.

Remembering with all this, that the average length of time a traffic employe is in the service of the company is less than three years, and bearing in mind that in these days of unification, hardly a month passes when there is not some new method, or some new policy introduced, which may more or less radically change the scheme of instructions, from one end of the rules to the other, one has some inkling of what it means to provide a scheme of instructions and training, which will insure uniform practices throughout the territory; which will insure methods and phrases understandable to the telephone using public; and which will provide a plan of procedure flexible enough to admit of giving high grade telephone service at a cost which is not prohibitory.

A. I. E. E. Notes.

The new telegraphy and telephony committee for the ensuing year as announced in the September issue of the Proceedings, is made up of S. G. McMeen, chairman, Columbus, Ohio; F. F. Fowle, New York; H. M. Friendly, Portland, Ore.; Bancroft Gheradi, New York; A. H. Griswold, San Francisco; F. J. Mayer, Madison, Wis.; H. Mouradian, Philadelphia, Pa.; L. M. Potts, Baltimore; Henry L. Reber, St. Louis; Allard Smith, Columbus, Ohio; J. L. Wayne, Indianapolis, Ind., and George J. Yundt, Atlanta, Ga. The following who are engaged in telephone work have been elected associate members of the Institute: George W. Dickerson, engineer, Telephone Improvement Co., Cleveland, Ohio; Charles C. Kastner, division equipment engineer, southern division, Pacific Telephone & Telegraph Co., Los Angeles, Cal.; Arthur L. Littig, superintendent of traffic, British Columbia Telephone Co., Vancouver, B. C., Can.; Earl R. Neir, chief installer, Automatic Electric Co., Chicago; Thomas H. Nicholson, switchboard engineer, Bell Telephone Co., Montreal, Que., Can.; Patrick H. Skahill, plant superintendent, Hawkeye Telephone Co., Des Moines, Iowa; and Yoshihiko Takata, telephone and telegraph engineer, department of communication, Japanese government, Tokio, Japan.

Georgia Company Would Raise Rates.

Officials and attorneys for the Monroe Telephone Co., with exchanges in Monroe, Bostwick and Bethlehem, appeared before the Georgia Railroad Commission recently and argued a petition for the right to increase the rates now charged for telephone service.

A flat raise of fifty cents per subscriber is asked for the town of Monroe. Business houses in that city now pay $2.50 per month. The company desires to raise this rate to $3.00. The charge for residence service is $1.50 per month. It is contemplated that this rate shall be increased to $2.00.

J. H. Nunnally, president of the Monroe Telephone Co., and Napier, Wright & Co., of Atlanta, attorneys for the company, are representing the petitioner. Opposing the proposed increases is W. O. Dean, of Monroe, who represents the mayor and council of that city as well as a hundred or more citizens.

The petition for the right to increase rates is based by the company upon the declaration that present rates do not permit a fair return upon the investment involved.

Is This Typical French Service?

The Society of Telephone Subscribers, an association which grew out of the chaos and inefficiency of the government-owned telephones in France, says a Paris cable, has just made known the history of the lawsuit of Dr. Seroison, of Paris, against the telephone administration.

The doctor was frequently bothered by patients informing him that they could not obtain his number, or that if the number was obtained the reply frequently was that no such person as Dr. Serioson was known at the address. Five years of this passed. Then, having lost many patients through bad telephone service, the doctor investigated and discovered that his number had been given to a laundress and to still another person as well as to himself. So he brought suit.

He got a verdict of $40 damages, but the administration appealed and the verdict was reversed, the court finding that the state, though proprietor of the telephone lines, was not responsible for errors committed in the official directory.

France has six telephones per 1,000 people.

New York Town Would Revoke Franchise.

Mayor Grogan, of Herkimer, N. Y., has asked the board of trustees to consider the question of compelling the New York Telephone Co. to surrender the franchise granted to the Home Telephone Co., or to render telephone service at the same rate as the Home company did before it was absorbed by the Bell. The trustees have requested the village attorney to examine the franchise and to advise the board of its rights and powers in the matter at the next meeting.

We Pay Your Repair Bills

Rather a startling statement, isn't it?

Let us tell you about it.

We have such positive knowledge that Chicago Telephones are trouble proof that we bind ourselves legally to pay all repair expense. We pay not only for materials required, but also for the time and expenses of your trouble man while he is going to and from the telephone, and while he is making the repair.

If the telephone is ten miles from your Exchange this expense item might be greater than the price of the telephone. We can afford to do this because the percentage of Chicago Telephones that ever need attention is negligible. During the year ending July 1, 1912, with six hundred thousand telephones in use, this trouble insurance cost us only $274.00.

No other telephone factory dares to duplicate this repair service because no other telephone is good enough to justify it.

Write for booklet entitled "Making Good."

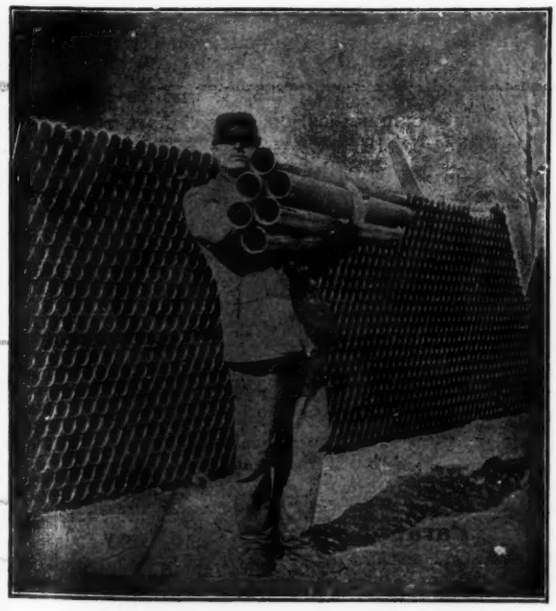
Chicago Telephone Supply Co.
Makers of Telephones and Switchboards
Elkhart, Indiana, U.S.A.

Underground
CONDUIT SYSTEMS
our specialty

WORK STARTED
AT ANY POINT
WITHIN 48 HOURS

Write us for estimate

G. M. GEST
Engineer—Contractor
Executive Office
277 Broadway, New York
Cincinnati **Chicago** **San Francisco** **Montreal**



Carrying 30 feet 3-inch socket joint conduit.

Orangeburg Fibre Conduit
("Admitted to be the best Fibre Conduit")

Made in FOUR STYLES OF JOINTS
Socket, Sleeve, Screw and Harrington
WITH BENDS AND FITTINGS FOR SAME

Is the lightest conduit made

and means low freight and cartage costs

Send for The Conduit Book

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Please tell the Advertiser you saw his Announcement in TELEPHONY.

REGULATION OF UTILITIES BY COMMISSION.

(*Continued from page* 433.)

allowed to a utility in Wisconsin. In reply to this it may be said that the commission has never and does not intend to establish any fixed rate of return. In one of its decisions it expressed its views on the subject as follows:

"The rate of return which must or should be allowed on whatever investment may be determined to exist obviously depends both upon the class of the utility enterprise—whether gas, electricity, water, telephone, etc.—and the character of the individual plant and the circumstances under which it is operated within the class. Whatever rate of return may be determined upon, this rate must be sufficient, under all the circumstances, in each case to attract capital to that individual or class of enterprise."

Our supreme court has declared the policy that should govern the commission in dealing with the revenues of public service corporations in the case of the Minneapolis, St. Paul & Sault Ste. Marie Railway Co. against the Railroad Commission, 116 North Western, 913. In passing upon an order of the commission, the court said:

"In determining whether or not the order of the commission is unreasonable, it must also be considered that every unnecessary burden imposed upon the railroad impairs its net receipts and diminishes that margin, if there be one, between the amount sufficient to assure a fair return on the value of its property, plus the amount of its fixed charges and operating expenses, and its gross receipts.

"In this margin the public and the railroad are interested, because it is only when this exists that betterments in construction or improvements in service not imperative or indispensable, or reduction in rates, will ordinarily be voluntarily made by the railroad or can ordinarily be ordered or enforced by the commission.

"We are not now speaking of those extreme cases where public duty must be discharged, whatever the financial consequences to the railroad. But in ordinary cases to waste this margin is to waste the fund in which the whole public is interested. This should never be done for the benefit of the few, as against the interests of the many.

"It is also to be considered that this margin ought not ordinarily to be exhausted or swept away by orders or requirements of the Railroad Commission as fast as accumulated, because human nature or railroad nature is such that no one will long economize on operating or other expenses if his economy only furnishes a larger basis for further exactions."

In conclusion, I may briefly speak of the wisdom of the regulation of local public utilities by means of a state commission. Anyone who has given study and consideration to the subject and who has observed the results obtained by the regulation of such concerns by means of a central tribunal must be convinced that such a system of regulation is preferable to a system of regulation by any local municipal authority.

Efficiency Far Superior to Local Councils.

Intelligent regulation of public utilities requires engineering, accounting and statistical skill of a high order. Those entrusted with the work of investigation and study of the various subjects presented for consideration must have scientific knowledge in the respective branches or departments of utility management and operation. With a competent staff of experts in the different lines of service, engaged constantly in examining plants throughout the state, it is possible for the regulating board to bring to the solution of every problem arising a breadth of vision and experience that is invaluable both to the public and to the utility.

No regulation can be effective which is not based upon accurate information and which is not actuated by a sense of justice and equity. In the light of the past, it must be conceded that an independent tribunal, free from local influences and prejudices, and assisted by a corps of trained experts, is better qualified to efficiently regulate public service corporations and individuals engaged in public services than any municipal council or local tribunal. In few instances would it be possible for municipalities to maintain the necessary organization of competent assistants to deal intelligently with the problems involved in the regulation of public utilities. The cost of such an organization would be prohibitive to most municipalities.

In central control there is therefore not only efficiency but also economy. One body can serve all municipalities as well as one municipality and serve them better. After four years of administration of the Wisconsin law, the results obtained from its operation have been generally satisfactory. Our experience indicates that a comprehensive system of regulation such as provided by our law is not only advantageous to the general interests of the public, but as well to the business interests of utilities.

Telephone a Cause of Trusts, Says Perkins.

I recently saw a statement to the effect that there were about 14,000,000,000 telephone calls made in the United States during the past twelve months, writes George W. Perkins, in the Chicago American.

If that means anything it certainly means concentration—concentration of a most practical, virile, far-reaching sort.

It means that 14,000,000,000 minds were, for all practical purposes, emancipated from the bodies that they inhabited, given wings and allowed to fly through the air to some local or far distant point to hold intercourse with 14,000,000,000 other minds, return to their bodies and then perhaps the next minute go off in some other direction and do business or have social intercourse with still other minds.

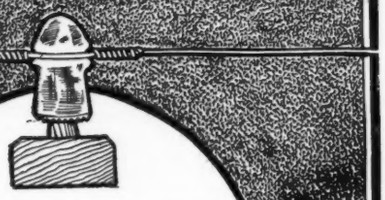
If we could see with the naked eye the minds that are nowadays flying through the air in every conceivable direction we would perhaps be better able to realize the perfectly stupendous progressive strides made within a mere handful of years in the matter of intercommunication between human beings.

The telephone, with all that it implies in the way of improved intercommunication, is far more responsible for many of the problems of the present day which require solution than any trust magnate.

Some of our Democratic friends are saying that the trusts would not be in existence were it not for the tariff. We have had a tariff in this country for more than a century, and yet who ever heard of any trusts prior to a few years ago? No, the most important factor in bringing the trust into existence has been the stupendous development in means of intercommunication. The first requisite for doing business is to be able to get at a customer. The more customers you can readily instantly get at the more business you can do.

The Twentieth Century Limited, the telegraph and the telephone have annihilated space, have wiped out state lines, commercially speaking, have brought us all together within one enclosure, so to speak, and our problem is to learn how to get along with each other in this newer, more intimate relationship.

We cannot destroy this tendency to concentration unless we destroy the instruments that have brought it about. If we are willing to get rid of steam and electricity and go back to the ox-team method of intercommunication, we can solve our present-day problems very promptly; but if we are not willing to do this, then we must face our problems like twentieth century men, and the greatest of these problems is to learn how to minimize man's power for evil and maximize his power for good.



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For Best Transmission

The teats on the petticoat, an exclusive feature of Hemingray Insulators, prevent water running to pins and causing grounds.

Hemingray Insulators are all insulation and are unusually free from breakage.

Write for Prices

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Factories: Muncie, Ind.

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BROOKFIELD

INSULATORS

They have the QUALITY, the MECHANICAL STRENGTH and the ELECTRICAL EFFICIENCY that your insulators SHOULD have. It is real economy to use them on your High and Low voltage lines.

Brookfield Glass Co.

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You will find our prices *very* attractive.

No. 2
28 inches high. 6 lbs. of gas.

Soda Water Gas Puts OUT Fires

It puts out fires because it contains no FREE oxygen and being heavier than air displaces air. Fire can't live without the oxygen in air.

It is a harmless gas, odorless and non-corrosive. In fact, it is the same chemically as the breath you exhale, except that even a baby's breath contains decayed animal impurities, while carbon gas is pure.

The Diamond Liquid Carbonic Fire Extinguisher

is a heavy steel tank filled with Liquid Carbonic Gas and fitted with hose and coupling. We build this tank in two sizes:

No. 1, 20½ inches high, round bottom. Holds 4 lbs. of Liquid Carbonic Gas. Complete with hose and couplings, F. O. B. Liquid Branches..... $12.50
No. 2, 28 inches high, flat bottom. Holds 6 lbs. of Liquid Carbonic Gas. Complete with hose and couplings, F. O. B. Liquid Branches..... 15.00
Refills, at any of the Liquid Carbonic Co.'s branches:
No. 1, each..... .75
No. 2, each..... 1.00

Either size is easily portable so that a girl can pick it up, and while holding it with one hand can open the valve and direct the nozzle with the other.

In a jiffy the fire is out and the gas leaves no traces in its wake; in other words, by the use of this gas system you avoid the expensive delay due to the slow process of using blankets or sand tubes. You avoid the damage done by the corrosive chemicals used in chemical extinguishers and you insure the speediest possible resumption of service.

Send to our nearest branch for booklet.

20½ inches high. 4 lbs. of gas.

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JACOB BAUR Pres. and Treas.

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Practical Subjects—Letters and Discussions

The Sweepbend and Cap.

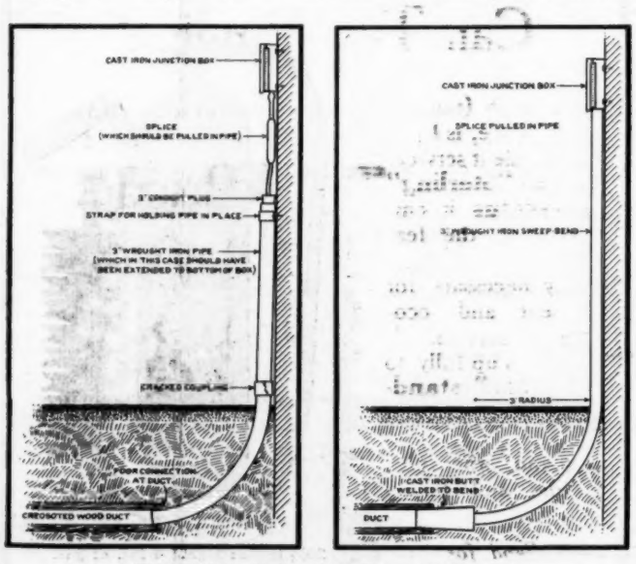
By O. R. Barnes.

The underground duct connection to a pole junction box is commonly known as a "subsidiary" and the pipe up the pole to a box a "lateral." The bend which terminates at the base of the pole, is usually classed as part of the subsidiary and is threaded and fastened to the lateral pipe by means of a standard screw coupling.

The sweepbend therefore can be defended as a subsidiary-lateral since it is made in one continuous piece the bend and lateral being combined. In addition to being continuous, it is provided with an iron welded butt, which tapers so as to fit snugly into the subsidiary duct. This butt end is heavy and when buried imbeds itself firmly into the ground, an advantage which keeps it from loosening at the duct, due to strain when the cable is being pulled in, and which tends to keep the tangent pipe or lateral, perfectly upright and free from turning.

The sweepbend as used in an Eastern city is made of three-inch standard wrought iron pipe. It is bent on a radius curvature of three feet, with tangents of six and ten feet, the butt joint being one foot six inches long, tapers from six to three inches. It is a typical feature of the interior block distribution system which is now almost the exclusive method employed. Some very neat work is done with the sweepbend, work which would be to the interest of every up-to-date company to emulate.

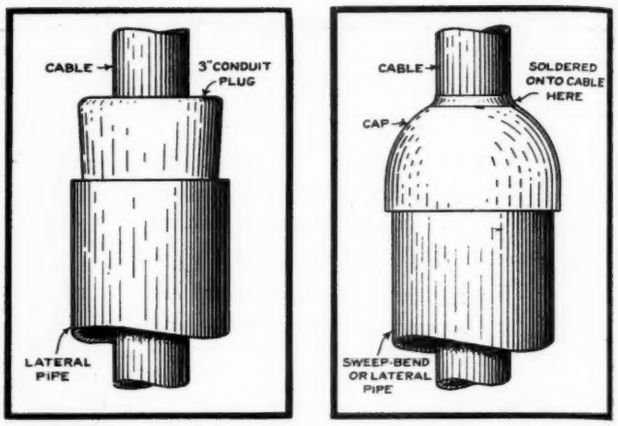
Some blocks in this city have as many as forty or fifty of these connections placed on fences and walls. The practice is to have the conduit force place the sweepbend and cut it off, when necessary, exactly at a point previously determined upon and specified by the engineer in charge of laying out the work. When the junction box is to be mounted immediately over the sweepbend, the specified point is usually six feet above the ground, this being considered a convenient height to enable a man to reach without the aid of a ladder, and at the same time just high enough to keep it out of the reach of small, mischievous


CAST IRON JUNCTION BOX
SPLICE
(WHICH SHOULD BE PULLED IN PIPE)
3" CONDUIT PLUG
STRAP FOR HOLDING PIPE IN PLACE
3" WROUGHT IRON PIPE
(WHICH IN THIS CASE SHOULD HAVE BEEN EXTENDED TO BOTTOM OF BOX)
CRACKED COUPLING
POOR CONNECTION AT DUCT
CREOSOTED WOOD DUCT
CAST IRON JUNCTION BOX
SPLICE PULLED IN PIPE
3" WROUGHT IRON SWEEP-BEND
3' RADIUS
CAST IRON BUTT WELDED TO BEND
DUCT

The Old and the New Type of Bend.

boys who would wilfully destroy the wire connections.

One practice which spoils the appearance of a junction box connection is to have the sweepbend cut too low. This makes it necessary to expose the splice or joint, between the pipe and box, and gives the work a crude appearance. In cities where the matter of appearance is well taken care of, this point in construction is recognized. The splice and cable is pulled into the sweepbend, and the bottom of the box allowed to come flush with the top of the pipe, so that the cable cannot be seen at all. When the box



Lateral Pipe Sealed with Plug and with Lead Cap.

sets flush over the pipe in the manner described, it is not necessary to seal the top of the sweepbend with a conduit plug, thus the box is made to serve a double service.

A conduit plug in the top of the pipe is in itself an unsightly affair and is not a satisfactory manner of sealing the pipe, since practice has demonstrated that it loosens after a short time, due to swelling, and gradually works itself out of the pipe. A lead cap as shown in the illustration is a correct and modern method of sealing a pipe. Its neatness improves the appearance of the construction and it eliminates to a great degree, possibility of damage in the winter time, arising from water flowing into the pipe and freezing. This cap can be made from an ordinary brad sleeve with a skirt of two inches; it is soldered onto the sheathing of the cable, and allowed to overlap the pipe the full two inches.

That the sweepbend, subsidiary or subsidiary-lateral is a great improvement over the old two piece affair must be agreed to by us all, i. e., the old bend, threaded, and the lateral fastened by means of a coupling. This coupling was always a source of more or less annoyance to the construction force. The conduit force usually placed the bend and left it to the cabling gang to screw on the lateral pipe. If the bend was placed out of alignment, the cabling gang found it difficult to place the pipe without binding or otherwise holding it in position. This practice of forcing the pipe into position often caused the coupling to crack. It was unnoticed until trouble developed due to water leaking into the bend, freezing and damaging the cable. With the sweepbend this source of danger is eliminated.

A Receiver Holder With Loud Speaking Attachment.

In recognition of the difficulty of taking notes, looking up references, and using both hands for other practical purposes, while talking through your telephone, H. Waymonth Prance has devised an automatic, sound magnifying trumpet, which consists of a flattened horn, similar in a way to the large, musical automobile and motor boat horns.

Behind this trumpet is a receptacle or platform into which, when the conversation is not necessarily private or the

¾ Mile of Cable Saved from Ruin

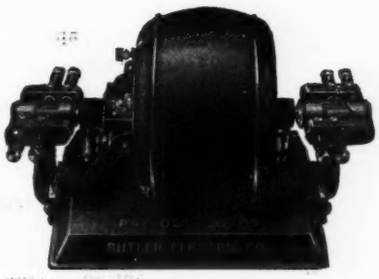
One of the leading Indiana telephone companies built an expensive cable line

Almost a mile of it was continually giving trouble on account of crystallization caused by tapping of the branches of trees through which the line ran. The cost of constant repairing was so large and the service so poor that it was thought necessary to abandon this line and rebuild along another route.

Instead—they saved their line by installing Aerial Conduit. It is the one sure, inexpensive and thoroughly satisfactory way to protect cable where it runs through trees.

Learn about Aerial Conduit—perhaps it will save for you.

Aerial Conduit Co.
N. G. Hunter, Pres.
Wabash, Ind.



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That's what you get when you use a

Butler Ringing Machine

Built for

Alternating, Pulsating and Harmonic Systems. Installed on Trial.

Send for booklet or write us regarding special equipment

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Requires no Wiping

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ADAMS
Bonding Clamps
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COMMONWEALTH HOTEL

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Opposite State House,
BOSTON, MASS.

Offers rooms with hot and cold water for **$1.00** per day and up, which includes free use of public shower baths.

Nothing to Equal This in New England

Rooms with private baths for **$1.50** per day and up; suites of two rooms and bath for **$4.00** per day and up.

Dining Room and Cafe First Class. European Plan.

ABSOLUTELY FIREPROOF

Stone floors; nothing wood but the doors.
Equipped with its own Sanitary Vacuum Cleaning Plant.

Strictly a Temperance Hotel ***Send for Booklet***

STORER F. CRAFTS, General Manager

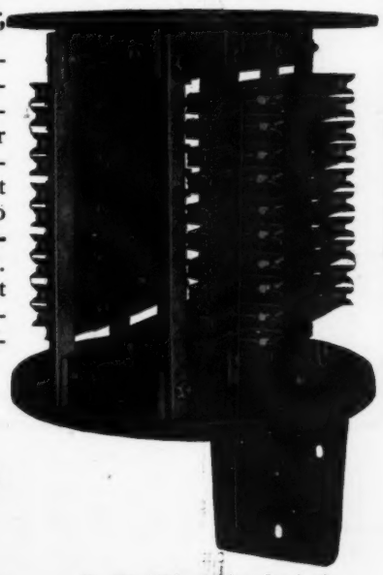
No. 268
Can Top Terminal

With **unit** (tubular fuse and carbon) **mountings,** shown here, is but one of the many types made by us for excellent service.

Like all **"Sterling" apparatus** it embodies all the features that are absolutely necessary for efficient and economical service. It measures up fully to **"Sterling" standards** of quality. Let us tell you about this and other protectors and terminals.

Send for Bulletin No. 3

LaFayette Electric & Mfg. Co.
LaFayette, Ind.



No. 268—With or without Pot-head

person listening is in need of both hands, the receiver of the telephone is easily dropped.

When told to "wait a minute" or "hold the line," the listener simply lets the receiver fall into the platform behind the trumpet, and it automatically slips into a niche that directs the ear piece or sound diaphragm directly into the big horn. The listener is then free to move about, while listening to the telephone. He can make notes, look up records, etc., without losing time or a scrap of the telephone conversation.

Conversation may be either carried on by use of this patented speaking horn or in the ordinary way. The voice is exaggerated to the extent of a large graphophone. A feature of the invention is its detachable arrangement, and independence of the telephone apparatus.

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

Advertising the Telephone.

A recent issue of The Telephone News contains an illustration from a Bell telephone cut booklet which has recently been issued by the publicity manager of the Bell Telephone Co. of Pennsylvania and sent to the several division managers of the company. It has been prepared to meet the need of an increasing number of storekeepers who wish to use such cuts in folder, booklet, bill-head, letter-head, and in newspaper advertising work.

With this booklet the solicitor may more intelligently call upon the storekeeper who is disposed to make the telephone a live factor in his business, and together they may decide upon the cuts most suitable to the individual storeman's use.

To judge from the number already requisitioned for millinery, grocery, drug and dry goods stores, and for such special lines of business as plumber, coal dealer, florist and confectioner, it would seem that a most popular appreciation and response is to be accorded this telephone publicity plan.

As is seen in the illustration, the telephone is featured as a factor in practically all lines of business and the plan will undoubtedly increase the use of telephone service.

YOU CAN ORDER your COAL by TELEPHONE?
For Butcher, Delicatessen or General Provision Dealer
This cut is applicable to all lines of business—to any one who wishes people to know the telephone as a strong element in his business.
MARKETING by TELEPHONE
SPECIAL ATTENTION TO TELEPHONE ORDERS

Suggestions for the Manager to Offer His Patrons as to Telephone Advertising.

Why the Installer Should Boost His Business.

There is perhaps no other branch of the telephone business that affords its representatives so good an opportunity to come in touch with the public and the subscriber as does the installation department, says J. T. Worthington in The Telephone News.

The installer is seen on the street and in the cars with instruments and tools, and is the object of many interested gazes as he goes from job to job completing his day's work.

Not every instrument man realizes the responsibility placed in his hands. He is responsible for the good or ill will of the subscriber toward his company at the outset. When he has completed a good job and has satisfied the subscriber as well as himself that his work is done properly, he has made a big step in the right direction and there will be nothing but praise for him and the company which pays him for just the kind of work it is capable of turning out.

If he is interested in the business and takes the time and trouble to explain all with which he is familiar, he will leave a wonderfully good impression of himself and his company. Often a man is asked to perform little favors for which he only receives the appreciation of the person whom he serves, in a few words. It may not be pleasing to him to be asked to hang a picture or nail down a plank which has come loose. People never stop to think that this man is a skilled mechanic and in many instances an experienced electrician whose time is valuable, yet it is time well spent and an investment that bears a large rate of interest for the telephone company.

When the installer calls at the subscriber's house or office to put in the instrument he is frequently asked to give his advice as to the best location for the telephone. It is "up" to him in many cases to decide whether the instrument would be more conveniently located if placed in a certain position, or whether he should follow his first impulse to install it where the la-

Patent Pending

"Hy-Po-Stat"

The All Metal and Porcelain Cable Protection
This is the terminal that

"Protects Your Cables"

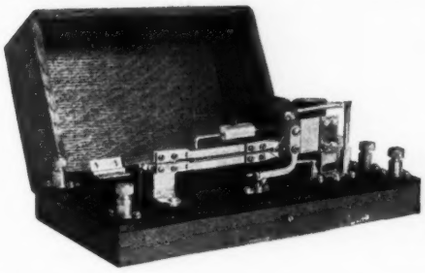
and makes your investment a permanent one.
For further information ask your jobber, or write

The Royal Electric Company
SIDNEY, OHIO

Satisfaction Guaranteed

Every Purchaser of the Roberts

SIMPLEX POLE CHANGER



You don't have to guess about it being right, or take our word for it. We send it to you; **you give it a trial**; find out for yourself what it will do.

Our Simplex Pole Changers for small magneto boards, P. B. X. and selective ringing, **will cure your pole changer troubles.** Besides they give you ringing service which will please your subscribers, and you don't need to be continually watching to keep it adjusted.

Write us direct for more information, or your Jobber.

Simplex Pole Changers are for sale by the following:

Central Electric Co., Chicago.
Automatic Electric Co., Supply Dept., Chicago.
Swedish-American Mfg. Co., Chicago.
Monarch Telephone Mfg. Co., Fort Dodge, Iowa.
Monarch Telephone Mfg. Co., Dallas, Texas.
Julius Andrae & Sons Co., Milwaukee, Wis.
Indianapolis Electric Supply Co., Indianapolis, Ind.
Varney Electrical Supply Co., Indianapolis, Ind.
Century Telephone Construction Co., Buffalo, N. Y.
Tel-Electric Co., Houston, Texas.

HOMER ROBERTS MFG. CO.
659 Melrose St. CHICAGO

FIBRE

In sheets, rods and tubes. Special shapes to order. Specialties used by manufacturers of telephone equipment furnished.

DIAMOND STATE FIBRE COMPANY
General Offices
ELSMERE, DEL.
Chicago Branch
714 West Van Buren St.

DISFICO HORN INSULATION

the newest and best insulation for armature work.
Absolutely free from acid, etc.

Sample on application.

"MANSBRIDGE" TYPE, TELEPHONE CONDENSERS

embody all the essentials of long life and good service. ***Write for Literature***

ELECTRIC SPECIALTY CO.
Cresco, Iowa

Do You Need Supplies?

Drop a line to TELEPHONY and get in touch with all companies that can supply your needs through the medium of our

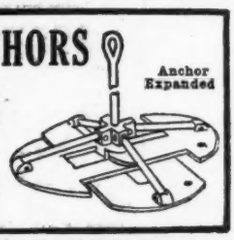
Advance Bulletin

It costs you nothing.

EVERSTICK ANCHORS

Have the greatest holding power. More "Eversticks" used than all other patented anchors. *There's a reason.* Write for literature.

Everstick Anchor Co.
ST. LOUIS, MO.



GLOVES Made of Rubber That Wears

Flexible, Seamless and Safe

Tested to 4,000 to 10,000 volts before leaving our factory.

The Canton Rubber Co.
Canton, Ohio

BOLTS

Of every description for telephone construction. Besides we make screws, nuts and pole line hardware. Hot or cold galvanizing. Prompt shipments. Write mentioning *TELEPHONY.*

ROCKFORD BOLT CO., 20 RUBY STREET ROCKFORD, ILL.

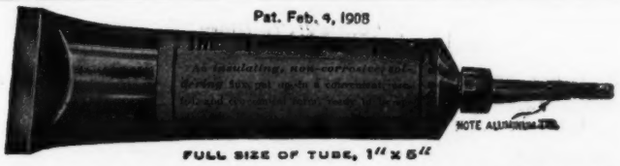
Insulated Staples

5 Sizes

Pat. Nov., 1900

BLAKE Specialties

STAPLES best for wiring.
TUBE FLUX best Flux for soldering.



FULL SIZE OF TUBE, 1" x 6"

BLAKE SIGNAL & MFG., CO. Write for Samples **246 Summer St., Boston, Mass.**

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bor of installation would be less and the time spent on the job the shortest. Very good judgment and common sense might be exercised here, as a dissatisfied subscriber is a dangerous enemy to the telephone company, while a satisfied subscriber is a most valuable asset.

A man often comes in contact with right-of-way difficulties such as stringing messenger wire and the routing of cable and ring wires which are to be attached to property belonging to others than the company. When properly handled these can usually be adjusted without the aid of the persons in charge of this particular department.

The work for the installer in the fashionable section of a city is cut out for him before he rings a door bell or runs a foot of wire. When he arrives at the address given on the order, he is often confronted by a large and magnificent residence which hints of concealed wiring and perhaps a few hundred feet of white wire to harmonize with the interior decorations. White wire usually means a trip to the wareroom or central office, entailing the loss of time and carfare. The man working in such a district must exercise every precaution. If he knocks loose a piece of plaster or paint, however small, he may be promptly informed that he is expected to repair the damage or the company will be subject to serious lawsuit and he may lose his position.

At some of these modern palaces one will find servants who have been instructed to keep a close watch over every workman who enters, to see that he does his work properly and as the owner desires, although it may be beyond all reason, and the persons making the suggestions may be wholly ignorant of the conditions under which the job must be completed. It is a difficult and pleasing experience to leave one of these homes with a job O.K.'d and everybody satisfied, and it is only through the interest in the work and the loyalty to the company on the part of the man concerned that anyone is ever satisfied.

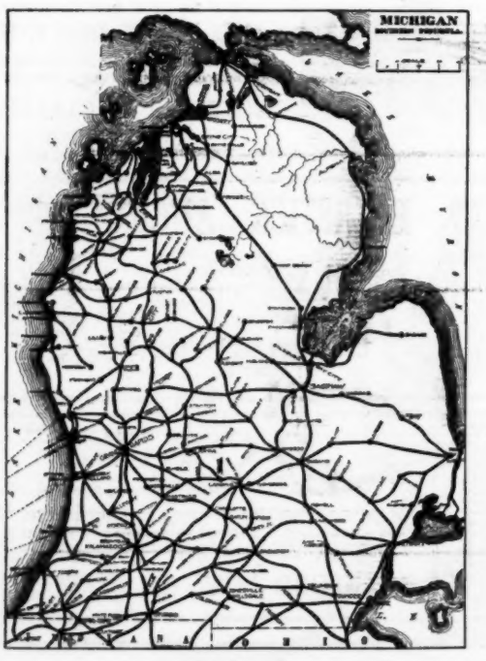
From Factory and Salesroom

Frank Pardee Back on the Job Again.

Frank Pardee, vice-president and general manager of the Ericsson Mfg. Co., of Buffalo, N. Y., spent several months abroad during the summer. He is now back "on the job" as the following from his pen testifies.

"Chris", Ericsson & Mich.

They call him "Constant Jollier" Litscher in some parts of Michigan; some of his friends call him "Mr. Columbus Christopher," others call him "The Flying Dutchman," but most of the telephone boys just call him "Chris," and Chris, himself, says he doesn't give a tinker's dam what they call him as long as they call him when they want



"Chris'" Territory.

to order something. And that brings us to what we're really talking about.

Chris (whose regular Sunday name, when he's signing an application for one million dollars' worth of extra life insurance, to safeguard that new boy at home, is Christian J.) is head of the electric company which bears his name, located at 28 Market avenue, S. W., Grand Rapids, Mich.

Michigan, as everybody knows, is a great telephone state and every telephone man in it knows Chris and his motto, "Service is what counts." And Chris makes it count, for, as he says, "I can hit 'em by freight in one day." Translated into our regular vernacular, Chris means that Michigan is fortunate in having Grand Rapids and Chris, for both are located within a one day freight radius of practically every point in the Wolverine state.

Now Michigan being a telephone state and Grand Rapids having Chris, what's more natural than Ericsson's choice of Chris for exclusive agent for Michigan? What indeed! Ericsson quality telephones plus Chris quality service—can you beat it? You can't and so hereafter Ericsson famous all steel telephones (or all wood, if you prefer) and our old friend Handy Mike and his Pretty Sister, and Ericsson's test set and switchboards and all the rest, are to be right in stock in Grand Rapids, with "Chris Service" and one day freight backing them, and all within telephone reach of every telephone man in Michigan.

And just as our scribe was leaving the dandy big warehouse and store of the C. J. Litscher Electric Co., Chris shouted, "Say! don't forget I ship supplies of all kinds with the telephones. It saves 'em freight." And so it does. Look at the map.

Swedish-American Company Doing Big Business.

Foreign business is keeping pace with the rapidly growing domestic sales of the Swedish-American Telephone Mfg. Co., of Chicago. Within the last twenty days two of its 100 unit type express switchboards have been shipped to South America. These switchboards were accompanied by a large shipment of Swedish-American clock-telephones.

The business in Canada has been brisk and several large orders have been received lately. A contract has just been closed for the installation of a complete Swedish-American system at Booneville, N. Y. Switchboards, telephones and construction material, are included in the order. The factory at Chicago is running at full speed and every effort is being made to keep up with orders.

Big Business of the American Steel & Wire Co.

Business of the American Steel & Wire Co. is heavier than at any time since the organization. Recently specifi-

WESTERN
CEDAR POLES
We treat our Poles and Cross Arms with Genuine Avenarius Carbolineum
DOUGLAS FIR
CROSS ARMS
Pioneers in Western Pole Industry
Producers and Mfrs.—Not Scalpers
THE LINDSLEY BROTHERS COMPANY, Spokane, Wash.

Oldest in the business.
POLES and CROSS ARMS
Prompt Shipments
Lowest Prices—Write
WM. MUELLER & Co. 920 Postal Teleg. Bldg.
Established 1862 CHICAGO

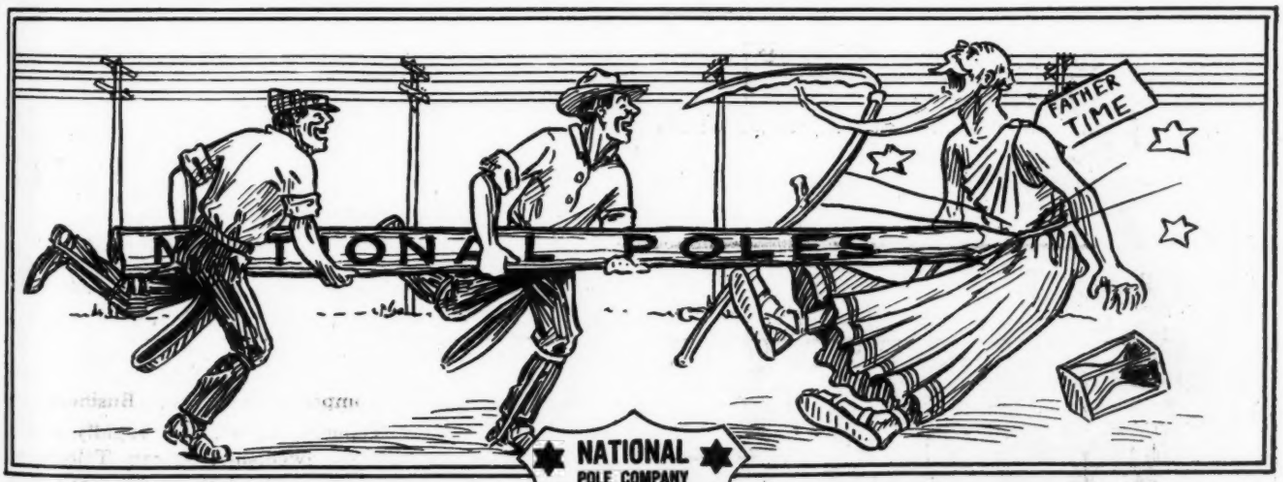
Idaho Cedar Poles
Northern Mercantile Co. Ltd.
Resident Producers
Sand Point, Idaho

IDAHO AND NORTHERN
CEDAR POLES
WE ARE PRODUCERS
Yards in IDAHO, MICHIGAN, CANADA.
Toledo Yard for Urgent Orders. : : Get our Prices.
Ask for Leaflet No. Six
THE F. BISSELL COMPANY, TOLEDO, OHIO

POLES OF
STERLING QUALITY
Oldest Cedar Pole Firm in Business
MICHIGAN WHITE CEDAR
W. C. STERLING & SON COMPANY
1880 MONROE, MICHIGAN

White Cedar Poles
C. H. WORCESTER CO.
CHICAGO

CEDAR POLES
We have a fine lot of poles, especially 4" 20'.
Our poles are strong and tough—the kind you need for long service.
LET US SEND QUOTATIONS TODAY
PERLEY LOWE & COMPANY
1458 McCormick Bldg. :: CHICAGO



"FROM THE STUMP
NATIONAL POLE COMPANY
ESCANABA, MICH.
CEDAR POLES
TO THE LINE"

Very Few Systems Employ Flimsy Construction any more. The Better the Company, the Better Its Methods. We are Able to Fill the Most Exacting Requirements of the Very Best Companies.

Over fifteen years of experience in WHITE and WESTERN CEDAR POLES
Exceptional Facilities. Yards at the Most Favorable Shipping Points.

National Pole Co., Escanaba, Mich.

cations against existing contracts have aggregated 8,000 tons a day, a rate of 2,400,000 tons a year. This is far in excess of the maximum capacity of the company. Ten years ago the wire company had a capacity of about 3,500 tons a day. Since then the capacity has been practically doubled.

Automatic Telephones for Nice, France.

The Automatic Electric Co., of Chicago, has received an order through its French representative, the Thomson-Houston Co., for 2,000 lines of automatic telephone equipment to be installed in Nice, France.

The order for this apparatus was placed by the French government, under whose jurisdiction the telephone system in France is operated.. This being the first installation of automatic equipment in that country, it will be watched with a great deal of interest.

Before placing the order for the automatic equipment for Nice, the French government dispatched several of its representatives to the United States and other countries to make a thorough investigation of the telephone situations therein. The placing of the order for the Nice equipment is the result of their favorable impression with the automatic system as operated in the United States.

In selecting Nice for the place in which to demonstrate the automatic system, the French government has selected one of the most popular watering resorts of the country, as it is visited yearly by hundreds of thousands of people, not only of France, but of many other countries as well.

Kellogg Advertising of Farm Telephones.

Following out the idea of last season's advertising campaign in the rural papers, The Kellogg Switchboard & Supply Co. is distributing a splendid four color reproduction of "Neighborhood News," a pen etching by Vallely. The subject of the last series of farm copy was entitled "Talk to Your Neighbors over Your Own Line" and Neighborhood News" is a continuation of the campaign to popularize the telephone in the country.

"Neighborhood News" shows the interior of a typical farm kitchen and a living room with the family group around a Kellogg magneto wall set. The subject of the discussion, judging from the interested expression of the listeners, is "Neighborhood News."

In the corner of the card is found the well known slogan of the Kellogg company, "The service of the telephone

A Kellogg "Live Wire" Advertising Card.

proves the worth of the line." On the reverse side is the following description of the farm telephone and its usefulness:

"Painters, poets and writers have brought before us, inimitably, the delights and shortcomings of the rural home. The farmer's life, from chores to chores, in fair weather and storm, has been pictured innumerably on canvas and in prose and poetry for our benefit. But no man living except the farmer himself knows the real feeling of sociability, of friendliness and of safety, that the farm telephone inspires. Its value cannot be measured in dollars and cents, nor in time saved or crops sold.

The telephone has driven loneliness from the country side. It has, more than anything else, done away with out-of-date agriculture—the telephone farmer is the business man.

But just as good stock and first class machinery spell the difference, oftentimes, between success and failure, so the best quality telephone renders a servic not to be compared with cheap apparatus or the few pennies saved in its first cost.

Kellogg telephones are guaranteed for five years. They are simple in construction, built of the best material and unsurpassed in all conditions or climates.

We have a little book that tells in plain words all about the farm telephone. We will send it to you promptly on request, and will assist you, if you are interested in this work, in every way we can."

Sound Magnifying Devices.

The recent exploits of Detective Burns have aroused widespread interest in sound magnifying telephones, and naturally the telephone man desires to keep in touch with every development in this field. Herman G. Pape of Buffalo, N. Y., for the last twenty years has devoted his time and efforts toward the perfection of loud speaking telephones and particularly telephones for the deaf. At a recent exhibition in his laboratory, the extreme sensativeness of his instruments is said to have been demonstrated thoroughly by practical tests. Their fitness for actual service, it is claimed, has been a matter of record for some time.

The construction of Pape devices is said to be such that they will gather every sound vibration for transmission and that hard use will not interfere with their ability to detect and magnify sound. Those interested in sound magnifying telephones will undoubtedly find the Pape literature full of interesting particulars. They may obtain it upon application to the H. G. Pape Electric & Mfg. Co., Buffalo, N. Y.

Ericsson "Society Notes."

The publicity manager of the Ericsson Mfg. Co., Buffalo, received a letter from Texas the other day and sent a part of it in to TELEPHONY. It was preceded by a red flag and at the end were some green flags which evidently indicated that more items of a similar nature will follow from the same facile pen. The item is as follows:

"Mort Wheeler, the genial and bald head of the Tel-Electric Co., Houston, Texas came near being in our midst recently, but the national game, in which he engaged with Avery Eckert and others, prevented. What was the score at 4:00 a. m., Mort? Anyhow it hasn't prevented him from making some big hits down among the onion patches. Gee, how those Texans do love Ericsson everlasting telephones and Mort. But can you blame 'em? Not if you know Mort—and the All-Steel Telephones.

Century Company Makes Additions to Sales Force.

The Century Telephone Construction of Buffalo, N. Y., announces that it has secured the services of M. W. Redmond, who will be associated with the sales department of the company in Buffalo.

Mr. Redmond has been connected with the manufacturing end of the Independent telephone business for the past ten years. Prior to his entry into the manufacturing field, he spent considerable time in the operating department of the Indiana Independent Telephone Co. He was recently associated with the Stromberg-Carlson Telephone Mfg. Co., having charge of its Kansas City office.

WHITE CEDAR POLES

We handle just the poles for your purposes—the kind that you can depend upon to give service.

We are producers of poles—not jobbers. Consequently reasonable prices.

Let us quote you on your next order.

KAYE & CARTER, 1043 Lumber Exchange Bldg., Minneapolis, Minn.

PRODUCERS OF QUALITY CEDAR POLES

WE PRODUCE OUR STOCK THEREBY GIVING YOU THE BEST THAT GROWS

GIVE US A TRIAL ORDER.

TRI-STATE CEDAR CO.
COEUR-D'ALENE, IDAHO

They last longer in any soil—Stand twice the breaking strain of others.

CHESTNUT POLES

LARGE STOCKS
LOW PRICES
QUICK SHIPMENTS

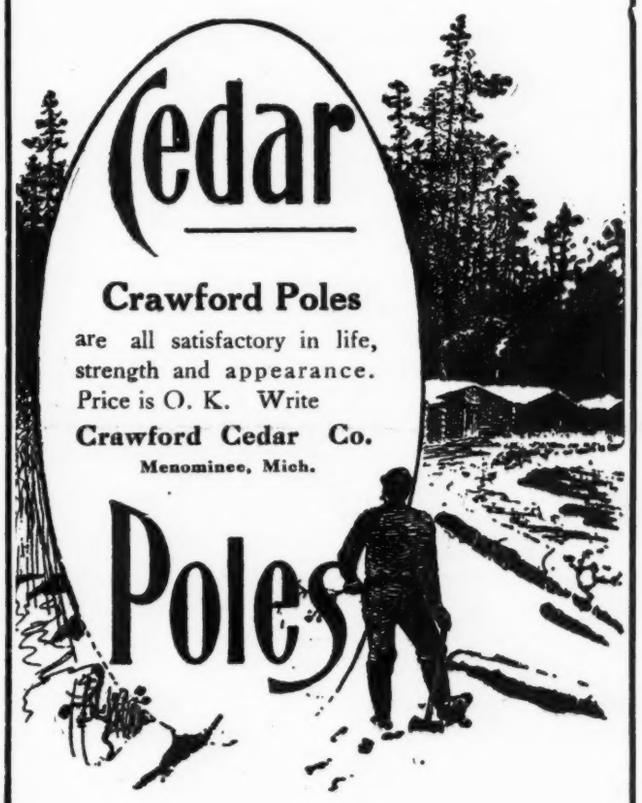
Write to-day to PADUCAH POLE & TIMBER CO.,
Paducah, Kentucky

The Orr Pole Reinforcing Process

Restores the life of poles which are decayed at the ground line. The Orr Reinforcement can be inexpensively applied without interrupting service. Send today for our valuable book on Pole Reinforcing.

PITTSBURGH REINFORCING POLE CO.
435 Sixth Ave., - PITTSBURGH

Cedar

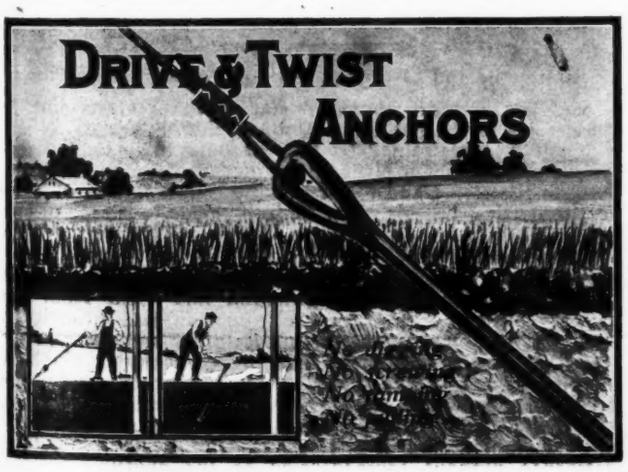


Crawford Poles

are all satisfactory in life, strength and appearance. Price is O. K. Write

Crawford Cedar Co.
Menominee, Mich.

Poles



COFFEY HAS WHAT YOU NEED

WRITE HIM BEFORE YOU INSTALL A NEW SET OF BOOKS

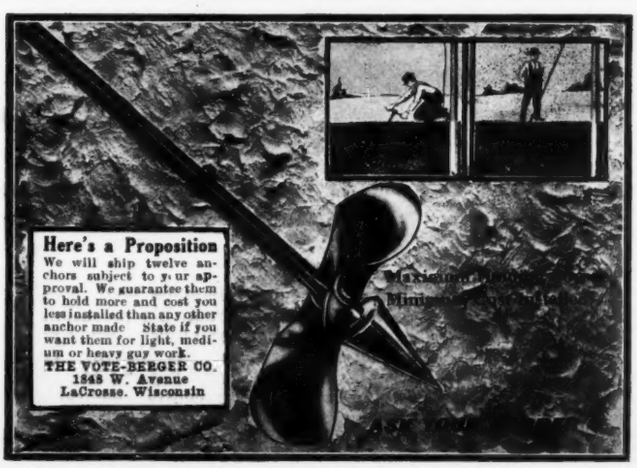
SUITE 501-2, K. of P. BLDG.
INDIANAPOLIS, IND.

The SUPERIOR Solderless Ground Rod

THIS rod has a self-contained wire connector. Insert the ground wire and drive the key—that's all. Makes a *quicker* and *better* connection than the average soldered joint. Write for particulars.

For Sale by

Insulator Arrester Co.
Duluth, Minn.



Here's a Proposition

We will ship twelve anchors subject to your approval. We guarantee them to hold more and cost you less installed than any other anchor made. State if you want them for light, medium or heavy guy work.

THE VOTE-BERGER CO.
1845 W. Avenue
LaCrosse, Wisconsin

Legal Cases and Decisions

By A. H. McMillan

Uncrossing Crossed Wires.

"Please tell me through TELEPHONY how high wires have to be in the clear at public road crossings in the state of Missouri? Where two companies have lines running parallel with each other and the lines get crossed, whose place is it to uncross them, the company that had a line there first or the last one? Has one company a right to cut out another company's wires when they get crossed?"

Unless the statutes of the state of Missouri set an exact height at which telephone wires have to be at public road crossings, the law is that they should be high enough to avoid danger to every one who uses the crossings in the ordinary case of travel. This would not include moving of buildings.

The company that placed its line last in position would be responsible for the crossing, and hence, as between the two companies, would be under obligation to uncross the lines. So far as the general public is concerned, the company which learned that the wires were crossed would be under the duty of removing the difficulty.

One company has not the right to cut out another company's wires when they get crossed, unless its own wires are crossed with those of the other company and the cutting out is necessary to the proper and safe uncrossing of the wires.

Rights of Abutting Owners.

"Will your legal department advise me as to the law regarding a property owner demanding the removal of telephone poles along the public highway past his farm? We have a franchise in the county covering the highway past his farm as on all other roads in the country. Has this farmer the right to chop down these poles? They are not on his land, only along the road."

The question depends entirely on whether in your state a telephone line is an additional burden on the highway. If it is held to be an additional burden, the consent of the property owners as well as the franchise from the county is necessary. Where the land owner's consent is necessary, he would have a right to require the removal of the poles but without doing unnecessary damage. We believe the chopping of poles would be unnecessary to their removal.

If the courts of your state hold that a telephone line upon a highway is not an additional burden, then the farmer's consent would not be necessary and he would have no right to demand the removal of the poles under any circumstances.

Abandoned Insulators Should be Removed.

A boy between three and four years old, while playing near a building, was struck by a falling telephone insulator. It struck the boy on the head, penetrated his skull, and injured some of the brain covering. The court held that the telephone company, even though it had abandoned the insulator, was liable for the injuries, because it should have removed it when it abandoned the line. Reid vs. New York & New Jersey Telephone Co., 135 N. Y. S. 846.

State Grant Does Not Impair City Franchise.

Emporia, Kans., a city of the second class, by an ordinance passed in 1900, granted a telephone company, the predecessor of the Emporia Telephone Co., the right for fifteen years to erect poles and string wires in all of its streets, with other incidental privileges, reserving to the city a percentage of receipts and the free use of a stated number of telephones for city business and prescribing maximum rates to be charged.

In the year 1905, the Emporia Telephone Co. succeeded to the rights and privileges so granted upon condition prescribed by the city that the rates should not be increased. On July 19, 1909, the city passed an ordinance granting to the Emporia Telephone Co. like privileges, in which it was provided that the company by accepting the privileges should agree to make certain specified material improvements in its plant, equipment and service, and should have the right to charge rates specified therein higher than the rates, under the old grant. It was also provided that, before any of the privileges should be valuable, the company should file a written acceptance of the terms of the ordinance, and also provided that the installation of the new system should be commenced within thirty days after such acceptance.

The last section provided that the ordinance should take effect on publication of the ordinance, filing of the acceptance and waiver, and the adoption of a resolution by the city council that the company had complied with the provisions for re-construction and improvements. The acceptance and waiver were duly filed and the ordinance published, but the resolution had not been adopted. Action was brought to restrain the company from increasing telephone rentals within the city. On the trial it was held that the new ordinance had not taken effect because the resolution in question was not adopted and that the provisions of the old ordinance remained in force, including the rates prescribed therein. City of Emporia vs. Emporia Telephone Co., 124 Pacific, 895.

Right of Land Owner to Enjoin Poles in the Street.

An electric light company started to erect its line in the streets of the hamlet of Quogue, Suffolk county, N. Y., when it was restrained by four property owners, three of whom showed themselves to be owners of property abutting on the street and to own to the center line of it. One of the parties did not show himself to be an owner of any land abutting on the highway. He was held to have no standing in court.

As to the other owners, it was held that the electric company, which had not procured any right from the owners, either by grant, or condemnation, had invaded the rights of the owners by erecting its poles and wires in the streets. It was also held that the company would have had the right in the street were it connected with the lighting of it, but as the street was already lighted by gas, the electric company could not set up its poles there for the accommodation of citizens desiring electricity in their residence without compensation to the abutting owners. The erection of the line was therefore enjoined. Post vs. Suffolk Light, Heat & Power Co., 136 N. Y. S., 401.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personal.

FRANK L. PERRY, well known to the telephone field through his long association with it, and also through his invention of duplex telephony, is, as this paper has previously announced, now a member of the executive staff of the Fidelity Trust Co., of Baltimore, and head of its publicity department. Mr. Perry's home town, Cumberland, Md., recently celebrated a "Homecoming Week," and he added not a little to the general excitement and interest of the event by designing a spectacular electrical display for the Second National Bank, of that city. This consisted of an immense searchlight, so arranged with shifting mirrors as to produce a wide range of colors. The apparatus was planned by Mr. Perry and the results he achieved are said by the local press to have been splendid.

A. J. KLEIN, son of J. M. Klein, of Mathias Klein & Sons, Chicago, and himself associated with the firm, was married

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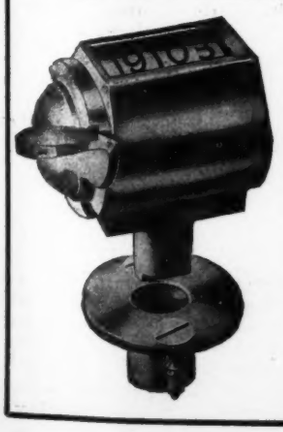

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records ELAPSED TIME—the exact time of the conversation—the time you charge for; no pencil, no brain work—just pull the handle. Impossible for the Calculagraph to make a mistake.

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recently to Miss Kathaleen C. Brennan, of Cork, Ireland. When one of TELEPHONY's representatives called, Mr. Klein appeared to be unusually happy and gave the foregoing as his reason.

MISS JOSEPHINE STANARD, who appears in the accompanying illustration, with her little sister Winnie, is declared to be the youngest telephone operator in the country regularly engaged in the work. Miss Josephine, not quite sixteen years of age, handles the Prairie Grove, Ark., switchboard of the Pioneer Telephone & Telegraph Co. during the evenings. The exchange has some 500 subscribers, besides a number of important long distance connections. Notwithstanding her youth, she handles the traffic for the two rush hours from seven to nine with as little friction as one is likely to find short of a celestial exchange. Incidentally she is pursuing senior studies in the high school and her telephone work aids materially in meeting the school expenses and the high cost of living. Latin declension and conversations with subscribers, it is said, are strangely blended in her dreams. Her small sister Winnie, is gradually acquiring a familiarity with the business through observation. But, while Miss Josephine is carrying the heavy strain of work and schooling simultaneously, her first and strongest loyalty is to the company and to the telephone business.

Miss Josephine and Miss Winnie Stanard.

EDWARD MCCORMICK has resigned as manager of the Plymouth Telephone Exchange at Plymouth, Wis. He will be succeeded by B. Kerskamp.

H. F. JEFFREY, of Saginaw, Mich., has been appointed district manager for the Inter-State Independent Telephone & Telegraph Co., with headquarters at Aurora, Ill.

O. M. LEICH, general manager of the Cracraft-Leich Electric Co., Genoa, Ill., is now the proud possessor of a daughter, who became a member of the family September 14.

D. Y. CRADDOCK, manager for the Southwestern Telegraph & Telephone Co. at Ennis, Texas, has tendered his resignation and will be succeeded by A. Rooper, of Frost.

GEORGE H. BLACK, an employe of the contract department of the Southern Bell Telephone & Telegraph Co. of Richmond, Va., for the last seven years, has been promoted to the position of manager of that division.

F. C. GORHAM, after serving but a few months as manager of the Georgetown division of the Cumberland Telephone & Telegraph Co., has been transferred to Lexington. His position will be filled by Dennis Mulligan of Lexington.

J. L. BROWN, division traffic superintendent of the Southern Bell Telephone & Telegraph Co. at Richmond, Va., has been promoted to the position of general toll supervisor. He will be succeeded by William A. Condit, former traffic chief of the Norfolk district.

ERNEST CAWCROFT, general counsel for the Home Telephone Co., of Jamestown, N. Y., and interested in and associated with other Independent telephone companies in that state, was recently nominated by the Progressive party of New York for State Treasurer.

Obituary.

FRANK PIERSON, for twenty-five years general superintendent of the Western Electric Co. in Chicago, Ill., died at Pasadena, Cal., after a short illness. He was preparing to return to Chicago. He is survived by his widow and a daughter, Mrs. J. L. Hertrain of Los Angeles.

Mr. Pierson had an attack of appendicitis in July, 1911. Last winter he contracted pneumonia, and in April went to Pasadena, where an abscess developed and he underwent another operation. He recovered, but later contracted a severe cold. Chills and fever developed soon after and he sank steadily until his death.

New Companies.

RUSHVILLE, ILL.—The Schuyler Telephone Co. has been incorporated by Enoch Edmonston, D. F. Haber and C. L. DeWitt. The capital stock is $10,000.

MILDRED, MONT.—The Mildred Telephone Co. has been granted a charter. The capital stock is to be $5,000. The directors are F. C. Collins, G. C. Burge and S. A. Souther.

READFIELD, WIS.—Articles of incorporation have been filed by the Readfield Telephone Co. The incorporators are Charles F. Schneider, Julius Guenther and Frank Kiesow.

Construction.

HARRELL, ARK.—The Southern Telephone Co. will construct a line to connect with the main line here and through to Hampton.

LOS ANGELES, CAL.—The Home Telephone & Telegraph Co. has taken out a permit to erect a new substation on Arlington street, Los Angeles.

GOLCONDA, NEV.—The Golconda Telephone & Power Co., operating local exchanges and lines covering parts of Humboldt, Lander and Elko counties, has arranged to extend its system to the northern part of the county. The line will be run from Winnemucca to Paradise Valley, forty-five miles north of here, and will cross the mountains.

SCOTLAND NECK, N. C.—The Carolina Telephone & Telegraph Co. anticipates improving and remodeling the local telephone exchange and the installation of a common battery system.

Elections.

SHELBYVILLE, ILL.—The directors of the Sigel Telephone Co. have elected officers as follows: President, Barney Neibrugge; vice-president, C. V. Chappalear; secretary, John H. Schutte; treasurer, John Kaufman. The other directors are: John T. Swingler, I. J. Fallert and Martin Walk.

TROWBRIDGE, ILL.—The directors of the Trowbridge Mutual Telephone Co. have elected officers as follows: President, Frank Kennedy; vice-president, Peter McAndrew; secretary and treasurer, Robert Bingaman.

Franchise.

GRUNDY CENTER, IOWA.—The city council has called a special election for September 30, to vote upon a proposition to grant a franchise to the Grundy Center Mutual Telephone Co. The company will install a $15,000 system if the permit is given.

Underground.

LITTLE ROCK, ARK.—The city is reported as planning construction of an underground conduit system for telephone and electric wires.

WAYCROSS, GA.—Practically all wires in the business district of Waycross are being placed underground.

DALLAS, TEX.—The board of municipal commissioners has passed an ordinance requiring all telephone companies to place their wires in conduits.

ALLENTOWN, PA.—The Bell Telephone Co. of Pennsylvania has taken out a permit to construct new underground conduits here.

Miscellaneous.

PERU, IND.—The Bell Telephone Co. has purchased the Home Telephone Co.

LUDINGTON, MICH.—The United Home Telephone Co. has purchased the Citizens Telephone Co. of Muskegon, Mich.

MANKATO, MINN.—The Mankato Citizens Telephone Co. will connect with the new circuits which were built recently along the line of the Milwaukee road. This will give the patrons of that company connection with Blue Earth, Winnebago, Easton, Wells, Delavan and Minnesota Lake, and in addition these lines will offer a much better service to Albert Lea, Austin and La Crosse.

PATTON, PA.—The St. Lawrence Rural Telephone Co., which has been operating the past four or five years as a private line, is to be incorporated. Application will be made for a charter by Jacob Warner, president; Charles Warner, treasurer, and Joseph Drass. The secretary is A. E. Albright.

EL PASO, TEX.—The Tri-State Telephone Co. has bought the Southern Independent Telephone Co.

JOAQUIN, TEX.—The Joaquin Telephone Co. has purchased the Joaquin telephone exchange from the Sabine Valley Telephone Co., together with toll lines from Logansport, La., to Tenaha, Tex.